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PRELIMINARY ASSESSMENT  
HERRON AVENUE PROJECT  
CINCINNATI, OHIO  
ATC PROJECT NO. 72.24907.0001

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## 1.0 INTRODUCTION

ATC Associates Inc. (ATC) completed a Preliminary Assessment of the Herron Avenue Project located in Cincinnati, Ohio, during March - May 2003. The Study Area is shown on Figure 1 and a Site Location Map is presented as Figure 2. The study was conducted on behalf of Working in Neighborhoods, Inc. (WIN), in general accordance with ATC Proposal No. EM-029-04, dated March 25, 2003. This report documents our findings.

### 1.1 Purpose and Scope

The purpose of this project was to investigate the extent and potential sources of 55-gallon drums of waste materials encountered during construction activities at the subject site. Accordingly, the scope of work consisted of: a) a review and compilation of existing data from previous investigations of the property, b) a review of historical records for the site, and c) a focused geophysical survey of the property.

### 1.2 Background

Two 55-gallon drums with unknown contents (liquid/sludge) were encountered during excavation activities associated with the Herron Avenue sanitary sewer construction project on March 18, 2003. Variable fill materials consisting predominantly of foundry sands were encountered during sewer installation up to that date, as the sanitary sewer line had already been installed north and south of the subject area along Herron Avenue (a north-south connector between Dreman Avenue and Powers Road). Construction activities were halted with approximately 75 horizontal feet of sewer line remaining to be laid to finish the project.

Initial remedial activities were undertaken, with the intention of removing the subject drums, and any associated impacted soil. After the removal of four additional drums from the trench (six total), additional drums were exposed in the trench wall. Work was halted until additional investigation could be performed to ascertain the extent of the drums. Drums and associated impacted soil are stored in a lined, covered roll-off box on-site. The trench was backfilled with

existing fill materials on-site to mitigate potential safety/exposure issues associated with the open trench.

Variable fill materials encountered to date at the site include tires, automobile parts, foundry sands, and miscellaneous fill. Such materials are stockpiled above-grade on-site. Tires have been segregated; other materials have been re-used as backfill around the new sewer line.

### **1.3 Site Description**

The study area consists of an approximately 700 feet long (north-south) by 400 – 200 feet wide (east-west) area immediately west of the West Fork of the Mill Creek, between Dreman Avenue and Powers Avenue. The study specifically excludes the City right-of-way (a linear north-south tract approximately 50 feet wide) in the central portion of the site. Currently the site consists primarily of graded soil and tree cover, with piles of debris and construction material located throughout the project site.

Limited site reconnaissance was performed over the site during April and May 2003. Several 55-gallon drums (most rusted and in various states of condition) were observed to be exposed in fill materials along the east side of the site, above the west bank of the concrete-lined West Fork Mill Creek channel.

### **1.4 Previous Investigation**

ATC reviewed the following documents provided by the City of Cincinnati and Working in Neighborhoods (WIN) to ascertain a site history and related previous investigations at the site:

- *Report of Phase I Environmental Site Assessment*, H.C. Nutting Company (HCN), October 31, 1995,
- *Report of Limited Subsurface Investigation*, HCN, January 11, 1996,

- *Report of Phase I Environmental Site Assessment*, Environmental Enterprises, Inc. (EEI), December 1999,
- *Phase II Investigation and Sample Results*, EEI, May 18, 2000, and
- *Geotechnical Exploration – Herron Heritage Homes Subdivision*, Thelen Associates, Inc. (Thelen), April 30, 2003.

The HCN Phase I Environmental Site Assessment (ESA) performed in October 1995 identified the following potential environmental concerns:

- Surface staining, apparently associated with petroleum products, in the northern portion of the property, and
- Hazardous substances or wastes associated with the former presence of a cabinet shop and enamel spraying shop on-site, and two 55-gallon drums observed on the property.

A Limited Subsurface Investigation was performed by HCN at the site in December, 1995. Eight shallow soil borings were advanced on-site to depths of 4 to 8 ft. below ground surface. Elevated levels of organic vapors (50 parts per million or greater) were detected in samples from six of the eight borings during field screening with a flame ionization detector (FID). However, only one sample was laboratory analyzed for volatile organic aromatics (VOAs), and the sample selected for such analysis had an FID reading of <1 ppm.

Samples from seven of the eight borings were analyzed for total petroleum hydrocarbons (TPH) by EPA Method 418.1. TPH concentrations ranged from non-detect (<10 ppm) to 17,000 ppm. One sample was also analyzed for polynuclear aromatic hydrocarbons (PAH) by EPA Method 8270. Although only four PAH compounds were detected, the detection limit (2.5 ppm) was relatively elevated (i.e., in excess of current analogous standards for a residential exposure scenario – 1.10 ppm for selected PAH compounds; Ohio Administrative Code 3745-300-08, Voluntary Action Program Generic Direct Contact Standards). The HCN report concluded that localized hydrocarbon impact was present, and that the detected hydrocarbons did not appear to be those of environmental concern (i.e. attributable to the presence of gasoline, diesel fuel, or fuel oil).

Although fill materials were noted in the boring logs contained within the report, the presence of such materials was not noted as a potential environmental issue.

The EEI Phase I ESA performed in December 1999 identified areas of environmental concern as outlined below.

- Four unlabeled 55-gallon metal drums were noted exposed in a hillside on-site. One of the drums appeared to contain asphalt; the other three drums were sealed and partially buried. Their content was not discerned. The report recommended characterization of the drums prior to removal and disposal from the site.
- Debris consisting of furniture, tires, bottles, and automotive parts was observed throughout the property. Staining around the materials was not noted. However it was noted that oil and other automotive related fluid may be present and that care should be taken when removing the materials to prevent environmental contamination.

In May 2000 a Phase II Investigation was performed by EEI to address the four 55-gallon drums identified in the December 1999 ESA. Samples were collected from the drums and laboratory analyzed for RCRA metals. Analytical results indicated the presence of lead in the drums (maximum concentration of 55 ppm). The report recommended that the drums be disposed of properly as "lead contaminated".

A geotechnical exploration was performed at the site by Thelen in April 2003. Thelen advanced fourteen soil borings over the area of the site in conjunction with a geotechnical engineering evaluation of the area, relative to its planned redevelopment for residential purposes. Eight of the borings were installed on-site; the other six were within the City's right-of-way (R-O-W). The borings encountered fill materials to depths of 9.5 – 24.5 feet across the site. The majority of the fill encountered consisted of "foundry spoils, silty fine sands", "some construction rubbish", and silty clay fill materials. "Petroleum odors" were noted from approximately 4 to 25 feet in a boring located in the east-central portion of the site.

## 2.0 HISTORICAL RECORDS REVIEW

The site consists of fourteen parcels located along the southern portion of Herron Ave, and is bordered to the east by the West Fork of the Mill Creek, to the west by Cass Avenue, and to the south by Dreman Avenue.

ATC reviewed available files at the Hamilton County Tax Assessor's and Auditor's offices, the Hamilton County Records Department, and the City of Cincinnati Addressing office to determine the historic parcel numbers and addresses of the site. The site currently consists of Hamilton County parcels: 192-0065-0096, -0097, -0107, -0108, -0109, -0110, -0111, -0112, -0113, -0114, -0115, -0116, -0117, and -0121.

Based on information obtained from these sources, the site has historically consisted of the following addresses:

- 3706, 3708, 3710, 3712, 3714, 3716, 3718, 3719, 3720, 3721, 3722, and 3723 Herron Ave,
- 3740 Cass Ave, and
- 1946 Dreman Ave.

After determining the historic addresses of the site, ATC researched Hamilton County Atlas maps; Sanborn Fire Insurance Maps; historic city directories; topographic maps and surveys; fire department records; and building records for the identified addresses. Aerial photographs were also obtained from the Hamilton County Engineer's Office, the Hamilton County Soil and Water Conservation District Office, the Hamilton County Parks Department, and the Ohio Department of Transportation to document site history. ATC also performed a chain-of-title search for the 3740 Cass Avenue address (parcel 192-0065-0121-00).

### 2.1 Hamilton County Atlas Maps

Atlas maps for the area of the site were reviewed at the Hamilton County/Cincinnati Public Library in Cincinnati, Ohio. ATC's reviewed Atlas maps for the years 1869 and 1884. The site

was labeled W.G. Barkham (northern portion) and Mary Forbes (southern portion) on the 1869 map, and as Barkham (northern portion) and A. Hoppe (southern portion) on the 1884 map. Copies of the Hamilton County Atlas maps are presented in Appendix A.

## **2.2 Sanborn Fire Insurance Maps**

Sanborn maps for the area of the site were reviewed at the Hamilton County/Cincinnati Public Library in Cincinnati, Ohio. ATC's reviewed Sanborn maps for the years 1922, 1934-1937, 1937, and 1937-1961. Prior to 1922 coverage for the site and surrounding area was not available. Information obtained from our review of the above-referenced Sanborn maps is summarized below:

### 1922 Map

The area of the site is indicated as the Edward Rolls Estate. 3740 Cass Avenue (parcel 192-0065-0121) is indicated as H. Maschmeier, and appears to be developed with one unlabeled structure.

### 1934-37 Map

The 3740 Cass Avenue parcel is developed with three automotive garages, a shed, a barn, a residential structure, and an unlabeled structure. A structure labeled 'Cabinet Shop & Enamel Spraying' appears in the southeastern corner of the site along Dreman Avenue.

### 1937 Map

The site appears similar to the 1934-1937 map, with the exception that the structure located in the southeastern corner of the site along Dreman Avenue is configured into sections labeled as a garage, plumbing, and wood working.

### 1937-1961 Map

The site appears as indicated on the 1934-37 map.

Copies of reproducible Sanborn maps are presented in Appendix B.

## **2.3 City Directory Records**

ATC reviewed historic city directories for the site and site vicinity in approximately 5-year increments from 1907 to 2002. The directories were reviewed at the Hamilton County/Cincinnati Public Library for the site and any non-residential listings in close

proximity/adjacent to the site that may have the potential to environmentally impact the site. The following site addresses were listed in the city directories reviewed:

Address	Occupant	Year(s) Listed
Not [REDACTED]	Vacant	1965, 1980-1981, 1985, 1991
	Not Responsive [REDACTED]	1971, 1974
	[REDACTED]	1961
	Not [REDACTED]	1952
	Not [REDACTED]	1947
	Not Responsive [REDACTED]	1907, 1916, 1927-1928, 1929-1930, 1933-1934, 1940
1992 Dreman and NE Corner of Herron and Dreman	DeWitt Products, Inc. (wood fabricators)	1961,
	Western Cabinet & Millwork Co. (factory)	1952
	Western Cabinet Manufacturing Co. (kitchen cabinets)	1947

## 2.4 Aerial Photographs

Aerial photographs were obtained from the Hamilton County Engineer's Office for the years 1948, 1986, 1996, and 2001; the Hamilton County Soil and Water Conservation District Office for the years 1956, 1975, 1977, 1987, and 1990; the Hamilton County Parks Department for the years 1931 and 1932 (compiled from late 1920s flight) and the Ohio Department of Transportation for the years 1958, 1960, 1962, 1973, 1981, 1986, and 1993 to document site history. Information obtained from our review of the above-referenced aerial photographs is summarized below :

### 1932 Aerial Photograph (compiled from late 1920s flight)

The northern portion of the site appears to be occupied by four unknown structures and one residence. Row crops appear along the northern property boundary. A dirt driveway extends south from the paved portion of Herron Avenue to one of the structures. The eastern and southern portions of the site appear to be cleared and undeveloped, with the exception of a commercial building located in the southeastern corner of the site along Dreman Avenue. Construction related to the rerouting and lining with concrete of the present configuration of the West Fork of the Mill Creek is apparent to the east of the site.

#### 1931 (October) Aerial Photograph

The site appears similar as to the 1932 aerial photograph. However, construction on the West Fork of the Mill Creek appears to be fairly complete and the creek appears to be lined with concrete.

#### 1948 Aerial Photograph

The site appears similar as to the 1931 and 1932 aerial photographs. The West Fork of the Mill Creek is labeled as 'Concrete Creek Channel'. A large cleared area is present on the east side of Herron Avenue in the southern portion of the site.

#### 1956, 1958, 1960, and 1962 Aerial Photographs

The site appears similar as to the 1948 aerial photograph, with an increase in the density of the trees located throughout the site. The commercial structure located in the southeastern corner of the site along Dremann Avenue appears on the 1956, 1958 and 1960 aerials and appears as cleared, undeveloped land on the 1962 aerial.

#### 1973 Aerial Photograph

The site appears to be developed only with a residential structure located in the central portion of the site. The trees in the northwestern portion of the property appear to have increased in density in comparison to the 1962 aerial. A dirt path connecting the northern and southern extensions is apparent in the central portion of the site. Several cars appear in the central and eastern portion of the site. In addition, thirteen objects of unknown nature appear in the southeastern portion of the site in four orderly rows. Dark material, potentially foundry sands, is visible in the central portion of the site. Evidence of dumping of unknown nature is apparent throughout the site.

#### 1975 and 1977 Aerial Photographs

The site appears to be undeveloped, with no structures present on the site. The evidence of dumping of unknown nature identified in the 1973 aerial photograph is not present. In addition, the dirt path connecting the northern and southern extensions of Herron Avenue is grown over. An increase in the density of the trees located throughout the site is apparent.

#### 1981 Aerial Photograph

The structure identified in earlier aerials appears to be demolished, and a new structure of unknown nature is present in the south-central portion of the site. In addition, the dirt path connecting the northern and southern extensions of Herron Avenue is grown over. An increase in the density of the trees located throughout the site is apparent.

#### 1986, 1987, 1989, 1990, and 1993 Aerial Photographs

The northern portion of the site appears similar to the 1981 aerial photograph, with an increase in the density of the trees located in this area. On the 1986 aerial, an oval cleared area of unknown nature is present in the south-central portion of the site, northeast of the structure identified on the 1981 aerial. Materials (automobiles and trailers) from the utilization of the south-central and southern portions of the site as a junkyard are present. A dirt path as wide as a typical city street extends south from the northern extension of Herron Avenue on the 1993 aerial photograph.

#### 1996 Aerial Photograph

The site appears similar to the 1993 aerial, with an increase in the density of trees so that

the northern portion of the site appears as wooded, undeveloped land. The southern portion of the site is cleared of the junkyard materials that appeared on earlier aerals. A cleared path extends south from the northern extension of Herron Avenue to an oval cleared area.

#### 2001 Aerial Photograph

The northern portion of the site appears similar to the 1996 aerial, with an increase in the density of the wooded areas. The south-central and southeastern portions of the site consist of cleared and partially wooded undeveloped land. No structures appear to be present on the site, however, two automobiles appear in the southern portion of the site.

Copies of aerial photographs are presented in Appendix C.

## **2.5 Topographic Maps and Surveys**

ATC obtained historical United States Geologic Survey (USGS) Topographic Maps from Environmental Data Resources (EDR) for the years 1914, 1953, 1961, 1970, 1975, and 1981. City of Cincinnati/Hamilton County Metropolitan Topographic Survey maps were obtained from the Hamilton County Engineer's Office for the years 1952 and 1975. A copy of the 1912 Topographic Survey of Cincinnati and the CAGIS map with contours based on 2001 aerial photography were provided by Mr. Jack Wachter, with the City of Cincinnati.

The original configuration of the West Fork of the Mill Creek is evident on the 1912 and 1914 maps, and shows that a westward bend of the creek meandered through the eastern portion of the site at that time. The creek was reconfigured and lined with concrete in the area of the site on 1952 map. The southeastern portion of the site sloped towards the creek at that time; the northern portion of the site was flatter and lower in elevation. The 500 feet contour line ran generally north/northwest to south/southeast along the north-south centerline of the site (the City's right-of-way). The 1961 USGS map shows generally the same topography. Subsequent USGS maps were photorevisions of the 1961 base map; structures and objects were modified, but the topographic base was not updated in such maps.

Significant elevation changes were evident in the 1975 map. The 500 feet contour extends eastward from the central portion of the site, nearly to the West Fork Mill Creek channel.

Changes in surface elevation in the east-central portion of the site suggest approximately 15 - 20 feet of fill materials had been placed in this area by this time, thickening to the east, towards the channel. The CAGIS map, based on aerial photography from 2001, shows an increase in elevation of the southeastern portion of the parcel.

Copies of the topographic maps and survey maps are presented in Appendix D.

## 2.6 Chain-of-Ownership Information

ATC performed a chain-of-title search for the **Not Responsive** at the Hamilton County Records office. The following table summarizes historic property ownership:

Date	Purchaser	Previous Owner
11/14/02	South Cumminsville Community for Better Housing, Inc.	<b>Not</b>
4/15/91	<b>Not</b>	Practical Family Living Center, Inc.
12/29/87	Practical Family Living Center, Inc.	<b>Not Responsive</b>
12/31/84	<b>Not Responsive</b>	Rev Realty Co., Inc. <b>Not</b>
10/14/82	Rev Realty Co., Inc. <b>Not</b>	Rev Realty Co., Inc. <b>Not</b>
1/11/82	Rev Realty Co., Inc. <b>Not</b>	<b>Not</b> Trustees
11/16/70	<b>Not</b> Trustees	Rev Realty Co., Inc. <b>Not Responsive</b>
11/10/70	Rev Realty Co., Inc. <b>Not Responsive</b>	Rev Realty Co., Inc.
2/2/65	Rev Realty Co., Inc.	<b>Not Responsive</b>
10/22/63	<b>Not Responsive</b>	
5/31/63		
7/30/59		
2/6/51		
5/29/48		
1/16/46		
6/14/05		

ATC was also provided and reviewed title insurance records by Sister Judy Martinez for the

purchase of parcels 192-0065-0096, -0098, -0099, -0100, -0107, -0108, -0111, -0112, -0113, -0114, -0115, -0116, -0117, -0121 that documented the sale of these parcels to South Cumminsville Community for Better Housing, Inc.

Copies of property transfer records are presented in Appendix E.

## 2.7 Building Department Records

ATC reviewed building department records at the City of Cincinnati Building Department for Cass and Herron Avenues. Records were not available for the current or historic site addresses.

## 2.8 Fire Department Records

ATC contacted the City of Cincinnati Fire Department regarding any underground storage tanks, aboveground storage tanks, or petroleum leaks or spills at the site and/or at historic site addresses. Records were not available for the current or historic site addresses.

## 2.9 Interviews

ATC conducted interviews regarding site history with [Not Responsive] a resident of Herron Avenue, and [Not Responsive], a current resident of Powers Street and a lifelong resident of South Cumminsville. [Not] indicated that she moved into the residence located at 3707 Herron Avenue in 1969, and at that time fill materials were not present on the site. She indicated that the trucks began dumping materials at the site a couple of years after she moved in, and that the trucks accessed the site during the day. She was not aware of the origin of the fill materials and did not recall any specific company name on the trucks. [Not] a resident of 1935 Powers Street is a lifelong resident of the community. [No] [Not] indicated that the Creek was reconfigured and lined with concrete around 1930. He indicated that at that time the site was utilized for residential purposes. He also

indicated the site owner, [Not Responsive] grew vegetables and operated a 'truck garden' (a vegetable sales business).

## 2.10 Historical Summary

From the sources described herein, it is apparent that the northern portion of the site was utilized for residential and agricultural purposes from the late 1880s to the 1960s. From at least 1869 to 1905, the site was owned by private individuals and likely utilized for residential and agricultural use. From 1905 to approximately 1948, the northern portion of the site was owned by [Not Responsive] who reportedly utilized the land as a residence, and also to grow and sell vegetables. This portion of the project site was purchased by [Not Responsive] in 1963, and subsequently was transferred to the Rev Realty Co. and [Not Responsive] until 1987. During this period of time, this portion of the site appears to have been vacant; however, separate oval cleared areas of unknown nature are apparent on the 1986 and 1996 aerial photographs in the southern portion of this parcel. In addition, materials from the utilization of the southern portion of the project site as a junkyard have historically encroached on the southern portion of this area. On subsequent aerial photographs to 1986, the site appears increasingly wooded until the area was recently cleared for the proposed housing development.

The southern portion of the site has been utilized for residential and light industrial purposes, as well as a junkyard. A residential structure was present on the west side of Herron Avenue in the 1970s and 1980s. A wood working/cabinet shop was located in the southeastern corner of the southern portion of the site along Dreman from approximately from the late 1930s to the 1960s. The southern portion of the site was utilized as a junkyard from the 1970s to the early 1990s. The area was also reportedly utilized as an auto maintenance shop.

Based on topographic maps reviewed and described herein, the east-central portion of the site increased in elevation from 1961 to 1975, likely as a result of fill material, domestic and industrial waste currently observed on the site. The southeastern portion of the site was also raised during the period from 1975 to 2001. Limited data from three boring logs in the

south/southeast portion of the site suggests that the nature of materials used as fill was predominantly construction debris, with a minimal industrial component (foundry sands in the upper few feet).

### 3.0 GEOPHYSICAL SURVEY

ATC retained Mundell & Associates, Inc. (Mundell) of Indianapolis, Indiana to perform a geophysical survey at the site. The purpose of the survey was to investigate the extent and geometry of potential buried 55-gallon drums of waste at the site, given the discovery of such materials during construction activities associated with the site infrastructure along Herron Avenue. Accordingly, a metal detection survey was conducted in a grid pattern over the site.

The survey was conducted on April 15, 2003. Mundell collected metal detection data using a Geonics EM-61 MKII detector. ATC personnel assisted the Mundell geophysicist in setting up a grid over the site, and with data collection. Geophysical data was continuously collected, using a datalogger and global positioning system tracker, with data recorded in one second intervals. A copy of the *Geophysical Investigation Report* prepared by MUNDELL, dated April 30, 2003 is presented in Appendix F.

The data collected by Mundell revealed occurrences of numerous sporadically placed metallic objects throughout the site. Geophysical data was contoured, and a color scale used to illustrate survey findings. Gross readings (indicative of "total" readings, including both surficial and buried metallic signatures) are illustrated in Figure 1 of the Mundell report (Appendix F). Data suggests a pervasive presence of metallic objects (typical of landfills) throughout the site.

Differences between metallic detection channels may be used to interpret metallic properties at depth in the subsurface. A channel difference map is presented in Figure 2 of the Mundell report, and illustrates buried metallic objects. Such data indicates that the majority of the metallic objects in the area are either at or near the surface. However, several strong anomalies are present in the northern two-thirds of the site (with the greatest concentration in the central portion of the site, near the area in which the drums were encountered in the City's right-of-way).

Larger, regular-shaped anomalies (shown in deeper red/orange colors and surrounded by a blue hatched contour in Figure 2 of the Mundell report) are commonly associated with drum

repositories. Other isolated or irregularly shaped anomalies are less indicative of drums (though they could be). The largest anomaly located in the north-central portion of the site represents a laterally extensive significant area of buried metal, potentially consistent with systematic drum burial.

The area of filling in the southeastern portion of the site bears a markedly different geophysical signature than the majority of the remainder of the site. This area appears to be much less metallic in nature. Such geophysical properties are consistent with boring logs from this area, which suggest a minimal industrial component to the fill used to raise this area.

It should be noted that as shown on Figures 1 and 2 and as presented in Appendix F of the Mundell report, geophysical data was not collected in the following areas due to vegetation and irregular terrain associated with current construction activities: along the east side of the site area located to the east of the City of Cincinnati R-O-W and west of the area of drum exposure indicated on the west bank of the creek, and in two sections located in the northwest portion of the site.

#### 4.0 CONCLUSIONS AND RECOMMENDATIONS

Industrial wastes (predominantly foundry sand), including numerous 55-gallon drums (at least some of which have been found to contain apparent spent solvent/petroleum products), appear to have been placed in the north-central/eastern portion of site from approximately 1970 to 1975. The site was owned by Trustees of [Not Responsive] [Not] during this period. The generator(s) of the waste is unknown. Fill materials/wastes encountered have included construction debris, domestic items, tires, automobile parts, 55-gallon drums, as well as foundry sands and mold materials.

Metallic anomalies at depth beneath the site suggest the potential presence of significant buried drum repositories. Three distinct anomalies in the north-central portion of the site may represent repositories of over 100 drums each. Other irregularly shaped anomalies scattered throughout the site are less likely to, but could represent significant drum accumulations. The potential also exists for additional drum repositories to be present beneath areas of the site where collection of geophysical data was not feasible. The most significant such area is located along the east side of the site, where the thickest area of industrial fill appears to have been placed on the site from approximately 1970 to 1975. Drums are exposed over an approximate 200 foot area along the west side of the West Fork of the Mill Creek channel, suggesting the potential for significant drum burial in this area.

Filling activities also occurred in the southeastern portion of the site, at some point from 1975 – 2001. However, the geophysical characteristics of such materials (as supported by boring logs from that area) suggest that fill in this area is significantly less industrial in nature. No metallic anomalies of significance were identified in this area, and boring logs showed only a minimal industrial component (isolated foundry sands in the upper five feet of fill).

Further investigation is recommended to: i) further constrain the origin of the industrial waste placed at the site, and ii) define the nature of the metallic anomalies detected. Additional interviews and focused research should be conducted to investigate the generators and responsible parties for waste placed at the site. Test pits should be

excavated in areas of metallic anomalies to investigate the source of the anomalies. Pits should be excavated systematically, such that the orientation and nature of potential repositories (i.e., systematically placed and/or stacked drums vs. randomly placed, isolated drums) may be ascertained. Such information is necessary to more accurately estimate the number of drums present, such that an appropriate remedial plan can be developed.

The remedial plan for the project should be based upon the proposed end-use for the site. It is our understanding that the site is planned to be redeveloped for residential purposes. Future pre-remedial investigation should adequately quantify soil and groundwater conditions, to ensure that the planned redevelopment does not create an unacceptable health risk to construction workers and/or potential occupants/visitors (i.e., end users). Remedial planning should be integrated with geotechnical engineering considerations, such that any engineering/construction-derived "waste" (as opposed to waste generated specific to any remedial activity) are characterized and managed appropriately and efficiently.

## **APPENDICES**

### **FIGURES**

Figure 1 - Area of Study Map  
Figure 2 - Site Location Map

### **APPENDIX A**

Hamilton County Atlas Maps

### **APPENDIX B**

Sanborn Fire Insurance Maps

### **APPENDIX C**

Aerial Photographs

### **APPENDIX D**

Topographic Maps and Surveys

### **APPENDIX E**

Property Transfer Records

### **APPENDIX F**

Geophysical Investigation Report (Mundell & Associates, Inc.)

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PRELIMINARY ASSESSMENT  
**HERRON AVENUE SITE**  
CINCINNATI, OHIO  
ATC PROJECT NO. 72.05876.0282

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June 4, 2003

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Figure 2 - Site Location Map

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## 1.0 INTRODUCTION

ATC Associates Inc. (ATC) completed a Preliminary Assessment of the Herron Avenue Site, a linear right-of-way tract located in the South Cumminsville area of Cincinnati, Ohio, during March - May 2003. The Study Area is shown in Figure 1. The study was conducted on behalf of the City of Cincinnati, in general accordance with ATC Proposal No. EM-028-04, dated March 25, 2003. This report documents our findings.

### 1.1 Purpose and Scope

The purpose of this project was to investigate the extent and potential sources of 55-gallon drums of waste materials encountered during construction activities at the subject site. Accordingly, the scope of work consisted of: a) a review and compilation of existing data from previous investigations of the property, b) a review of historical records for the site and surrounding area, and c) a focused geophysical survey of the site.

### 1.2 Background

Two 55-gallon drums with unknown contents (liquid/sludge, with characteristics consistent with that of spent solvent and/or petroleum products) were encountered during excavation activities associated with the Herron Avenue sanitary sewer construction project on March 18, 2003. Variable fill materials consisting predominantly of foundry sands were encountered during sewer installation up to that date, as the sanitary sewer line had already been installed north and south of the subject area along Herron Avenue (a north-south connector between Dreman Avenue and Powers Road – see Figures 1 and 2). Construction activities were halted with approximately 75 horizontal feet of sewer line remaining to be laid to finish the project.

Initial remedial activities were undertaken, and the drums and associated impacted soil were removed and stored in a lined, covered roll-off box on-site. After the removal of four additional drums from the trench (six total), additional drums were exposed in the trench wall. The trench was backfilled with existing fill materials on-site to mitigate potential safety/exposure

issues associated with the open trench. Laboratory analytical results indicated that three of the drums formerly contained solvents, and the fourth drum likely contained a petroleum product. The collected materials were characterized as non-hazardous, and were properly disposed of off-site as special waste.

Variable fill materials encountered to date at the site include tires, automobile parts, foundry sands, and miscellaneous fill. Such materials are stockpiled above-grade on-site. Tires have been segregated; other materials have been re-used as backfill around the new sewer line.

### **1.3 Site Description**

This study is limited to the City's right-of-way along Herron Avenue (a linear north-south tract approximately 50 feet wide through the central portion of the project site – see Figure 1). The study specifically excludes the approximately 700 feet long (north-south) by 400 – 200 feet wide (east-west) area immediately west of the West Fork of the Mill Creek, between Dreman Avenue and Powers Avenue, as well as the area west of the right-of-way that has been cleared for potential redevelopment. Currently the site consists primarily of graded soil/fill (predominantly black foundry sand), with local areas of variable fill and piles of construction materials.

Limited site reconnaissance was performed over the area of the site and surrounding area during April and May, 2003. Several 55-gallon drums (most rusted and in various states of condition) were observed to be exposed in fill materials above the west bank of the concrete-lined West Fork Mill Creek channel, east of the central portion of the site.

### **1.4 Previous Investigation**

ATC reviewed the following documents provided by the City of Cincinnati and Working in Neighborhoods (WIN) to ascertain a site history and related previous investigations at the site:

- *Report of Phase I Environmental Site Assessment*, H.C. Nutting Company (HCN), October 31, 1995,
- *Report of Limited Subsurface Investigation*, HCN, January 11, 1996,
- *Report of Phase I Environmental Site Assessment*, Environmental Enterprises, Inc. (EEI), December 1999,
- *Phase II Investigation and Sample Results*, EEI, May 18, 2000, and
- *Geotechnical Exploration – Herron Heritage Homes Subdivision*, Thelen Associates, Inc. (Thelen), April 30, 2003.

The HCN Phase I Environmental Site Assessment (ESA) performed in October 1995 identified the following potential environmental concerns:

- Surface staining, apparently associated with petroleum products, in the northern portion of the property, and
- Hazardous substances or wastes associated with the former presence of a cabinet shop and enamel spraying shop on-site, and two 55-gallon drums observed on the property.

A Limited Subsurface Investigation was performed by HCN at the site in December 1995. Eight shallow soil borings were advanced on-site to depths of 4 to 8 ft. below ground surface. Elevated levels of organic vapors (50 parts per million or greater) were detected in samples from six of the eight borings during field screening with a flame ionization detector (FID). However, only one sample was laboratory analyzed for volatile organic aromatics (VOAs), and the sample selected for such analysis had an FID reading of <1 ppm.

Samples from seven of the eight borings were analyzed for total petroleum hydrocarbons (TPH) by EPA Method 418.1. TPH concentrations ranged from non-detect (<10 ppm) to 17,000 ppm. One sample was also analyzed for polynuclear aromatic hydrocarbons (PAH) by EPA Method 8270. Although only four PAH compounds were detected, the detection limit (2.5 ppm) was relatively elevated (i.e., in excess of current analogous standards for a residential exposure scenario – 1.10 ppm for selected PAH compounds; Ohio Administrative Code 3745-300-08, Voluntary Action Program Generic Direct Contact Standards). The HCN report concluded that localized hydrocarbon impact was present, and that the detected hydrocarbons did not appear to be those of environmental concern (i.e. attributable to the presence of gasoline, diesel fuel, or fuel oil).

Although fill materials were noted in the boring logs contained within the report, the presence of such materials was not noted as a potential environmental issue.

The EEI Phase I ESA performed in December 1999 identified areas of environmental concern as outlined below.

- Four unlabeled 55-gallon metal drums were noted exposed in a hillside on-site. One of the drums appeared to contain asphalt; the other three drums were sealed and partially buried. Their content was not discerned. The report recommended characterization of the drums prior to removal and disposal from the site.
- Debris consisting of furniture, tires, bottles, and automotive parts was observed throughout the property. Staining around the materials was not noted. However it was noted that oil and other automotive related fluid may be present and that care should be taken when removing the materials to prevent environmental contamination.

In May 2000 a Phase II Investigation was performed by EEI to address the four 55-gallon drums identified in the December 1999 ESA. Samples were collected from the drums and laboratory analyzed for RCRA metals. Analytical results indicated the presence of lead in the drums (maximum concentration of 55 ppm). The report recommended that the drums be disposed of properly as "lead contaminated".

A geotechnical exploration was performed at the site by Thelen in April 2003. Thelen advanced fourteen soil borings over the area of the site in conjunction with a geotechnical engineering evaluation of the area, relative to its planned redevelopment for residential purposes. Six of the subject borings were installed within the R-O-W. The borings encountered fill materials to depths of 9.5 – 24.5 feet across the study area (9.5 – 17 feet within the R-O-W). The majority of the fill encountered consisted of "foundry spoils, silty fine sands", "some construction rubbish", and silty clay fill materials. "Petroleum odors" were noted from approximately 4 to 25 feet in a boring located east of the central portion of the R-O-W.

## **2.0 HISTORICAL RECORDS REVIEW**

ATC reviewed available files at the Hamilton County Tax Assessor and Auditor's offices, the Hamilton County Records Department, and the City of Cincinnati Addressing office to determine potential historic parcel numbers and addresses of the site. The site consists of Hamilton County parcel 192-0065-0131-00 located between the northern and southern extensions of Herron Ave, between Powers Street and Dreman Avenue. The site was formerly part of Hamilton County parcel 192-0065-0121, with the address of 3740 Cass Avenue. The site may also have been historically addressed as 3729 Herron Avenue.

After determining the historic address of the site, ATC researched Hamilton County Atlas maps, Sanborn Fire Insurance Maps, historic city directories, topographic maps and surveys, fire department records, and building records for the identified address. Aerial photographs were also obtained from the Hamilton County Engineer's Office, the Hamilton County Soil and Water Conservation District Office, the Hamilton County Parks Department, and the Ohio Department of Transportation to document site history. ATC also performed a chain-of-title search for the site. Findings are summarized in the following sections.

### **2.1 Hamilton County Atlas Maps**

Atlas maps for the area of the site were reviewed at the Hamilton County/Cincinnati Public Library in Cincinnati, Ohio. ATC reviewed Atlas maps for the years 1869 and 1884. The site was labeled W.G. Barkham (northern quarter) and Mary Forbes (central quarter) and J. Hetka (southern half) on the 1869 map, and as Barkham (northern half) and A. Hoppe (southern half) on the 1884 map. Copies of the Atlas maps are presented in Appendix A.

### **2.2 Sanborn Fire Insurance Maps**

Sanborn maps for the area of the site were reviewed at the Hamilton County/Cincinnati Public Library in Cincinnati, Ohio. ATC's reviewed Sanborn maps for the years 1922, 1934-1937, 1937, and 1937-1961. Prior to 1922 coverage for the site and surrounding area was not

available. Information obtained from our review of the above-referenced Sanborn maps is summarized below:

#### 1922 Map

The southern portion of the site existed as Herron Avenue, with apparent residential parcels east and west of it. The northern half of the study area was part of the Edward Rolls Estate. Parcel 192-0065-0121 (which the right-of-way extends through) is indicated as "H. Maschmeier", and appears to be developed with two unlabeled structures west of the right-of-way (R-O-W). The West Fork of the Mill Creek meanders through parcels east of the R-O-W.

#### 1934-37 Map

The northern half of the R-O-W appears to be undeveloped. The area west of this section was developed with three automotive garages, as well as a shed, a barn, a residential structure, and an unlabeled structure. The southern half of the R-O-W existed as Herron Avenue, with apparent residential parcels on either side in its northern portion. Parcels east and west of the southern part of the R-O-W appear to be commercial in nature. A structure labeled "Cabinet Shop & Enamel Spraying" appears southeast of the R-O-W along Dremann Avenue. The West Fork of the Mill Creek has been channelized, and now forms a linear north-south boundary to parcels east of the right-of-way.

#### 1937 Map

The site appears similar to the 1934-1937 map, with the exception that the structure located southeast of the site along Dremann Avenue is configured into sections labeled as a garage, plumbing, and wood working.

#### 1937-1961 Map

The site appears as indicated on the 1934-37 map.

Copies of reproducible Sanborn maps are presented in Appendix B.

### **2.3 City Directory Records**

ATC reviewed historic city directories for the site in approximately 5-year increments from 1907 to 2002. The directories were reviewed at the Hamilton County/Cincinnati Public Library for the site. The current site address was not listed in city directories reviewed. Available listings for **Not Responsive** are summarized below.

Not Responsive

Year(s) Listed
1965, 1980-1981, 1985, 1991
1971, 1974
1961
1952
1947
1907, 1916, 1927-1928, 1929-1930, 1933-1934, 1940

## 2.4 Aerial Photographs

Aerial photographs for the area of the site were obtained from the Hamilton County Engineer's Office for the years 1948, 1986, 1996, and 2001; the Hamilton County Soil and Water Conservation District Office for the years 1956, 1975, 1977, 1987, and 1990; the Hamilton County Parks Department for the years 1931 and 1932 (compiled from late 1920s flight) and the Ohio Department of Transportation for the years 1958, 1960, 1962, 1973, 1981, 1986, and 1993. Information obtained from our review of the above-referenced aerial photographs is summarized below :

### 1932 Aerial Photograph (compiled from late 1920s flight)

The area of the site appears to be agricultural/residential in nature. The northern portion of the area that the R-O-W extends through appears to be occupied by four unknown structures and one residence. A dirt driveway extends south from the paved northern portion of Herron Avenue (north of the site) to one of the structures. Row crops are visible west of the right-of-way in this area. The areas east and southwest of the R-O-W appear to be cleared and undeveloped, with the exception of a commercial building located southeast of the right-of-way along Dreman Avenue. Construction related to the rerouting and lining with concrete of the present configuration of the West Fork of the Mill Creek is apparent to the east of the parcel.

### 1931 (October) Aerial Photograph

The site appears similar as to the 1932 aerial photograph. However, construction on the West Fork of the Mill Creek appears to be complete; the creek appears to be lined with concrete.

### 1948 Aerial Photograph

The site appears similar as to the 1931 and 1932 aerial photographs. The West Fork of the Mill Creek is labeled as 'Concrete Creek Channel'. A rectangular cleared area is present on the east side of Herron Avenue in the southern portion of the site.

#### 1956, 1958, 1960, and 1962 Aerial Photographs

The site appears similar as to the 1948 aerial photograph, with an increase in the density of the trees, particularly in the area northeast of the R-O-W. The commercial structure located along Dreman Avenue (east of the southern portion of the site) appears on the 1956, 1958 and 1960 aerials and appears as cleared, undeveloped land on the 1962 aerial.

#### 1973 Aerial Photograph

The site appears to be cleared and contiguous between the northern and southern extensions of Herron Avenue. The area surrounding the northern portion of the site is developed only with a residential structure, immediately west of the R-O-W. The area northwest of the site appears to have become more densely wooded relative to the 1962 aerial. Several vehicles appear in the central portion of the site and east of the R-O-W. In addition, thirteen objects of unknown nature appear east of the southern portion of the R-O-W in four orderly rows. Dark material, potentially foundry sands, is visible in the central portion of the site. Evidence of dumping of unknown nature is apparent throughout the parcel.

#### 1975 and 1977 Aerial Photographs

The central portion of the site appears to have been graded; it is generally clear of trees. The northern half (the unpaved portion) of the R-O-W appears slightly darker than areas to the east and west in the 1975 photo. Trees are more abundant in the 1977 photograph; the site appears to be becoming more overgrown in nature. A linear light colored area along the southern portion of the R-O-W makes a half circle to the east, suggesting a turnaround area.

#### 1981 Aerial Photograph

The site appears similar to the 1975 and 1977 aerial photographs. An increase in the density of trees is apparent throughout the site and surrounding area. However, the southern portion of the R-O-W, as well as portions of the immediately surrounding area, are light-colored/reflective, suggestive of bare/graded soil in those areas. An apparent trailer is visible west of the southern portion of the R-O-W, and intermittent objects are present along the east side of the site in this area.

#### 1986, 1987, 1989, 1990, and 1993 Aerial Photographs

The northern portion of the parcel appears similar to the 1981 aerial photograph, with an increase in the density of the trees located in this area. Apparent automobiles, trailers, and miscellaneous debris are present in the southern portion of the site, suggestive of a junkyard or salvage operation. A lighter colored cleared area is present in the central portion of the site in the 1986 photo, suggesting grading activities/bare soil in that area. The vehicles/objects are much more consolidated and orderly in the 1993 photograph, and are limited to the southern portion of the site. The R-O-W is generally cleared and bare of trees throughout its entire length in the 1993 photograph. Lighter colored areas in the central portion (including a large oval area) suggest a turnaround (for dumping?) and grading/bare soils in that vicinity.

#### 1996 Aerial Photograph

The site appears to consist of a cleared path extending south from the northern extension of Herron Avenue to an oval cleared area in the central portion of the R-O-W. The area appears similar to the 1993 aerial, with an increase in the density of trees. Areas east and west of the northern portion of the R-O-W appear as wooded, undeveloped land. The

southern portion of the site is cleared of the junkyard materials that appeared on earlier aerials.

#### 2001 Aerial Photograph

The northern half of the site appears to be grown over and partially wooded. A narrow path extends along the R-O-W in this area, southward from the northern portion of Herron Avenue. The southern half of the R-O-W (and the area southeast) appears to be graded and cleared. Apparent automobiles are visible along the southern portion of the R-O-W.

Copies of aerial photographs are presented in Appendix C.

## **2.5 Topographic Maps and Surveys**

ATC obtained historical United States Geologic Survey (USGS) Topographic Maps from Environmental Data Resources (EDR) for the years 1914, 1953, 1961, 1970, 1975, and 1981. City of Cincinnati/Hamilton County Metropolitan Topographic Survey maps were obtained from the Hamilton County Engineer's Office for the years 1952 and 1975. A copy of the 1912 Topographic Survey of Cincinnati and the CAGIS map with contours based on 2001 aerial photography were provided by Mr. Jack Wachter, with the City of Cincinnati.

The original configuration of the West Fork of the Mill Creek is evident on the 1912 and 1914 maps, and shows that a westward bend of the Creek meandered along the eastern portion of the R-O-W at that time. The Creek was reconfigured and lined with concrete in the area of the site by 1952. The area along the southern portion of the R-O-W sloped towards the creek at that time; the northern portion of the R-O-W was flatter and lower. The 500 feet contour line ran generally north/northwest to south/southeast along the R-O-W. The 1961 USGS map shows generally the same topography. Subsequent USGS maps were photorevisions of the 1961 base map; structures and objects changed but the topographic base was not updated in such maps.

Significant elevation changes were evident on the 1975 Hamilton County map. The 500 feet contour extends eastward from the central portion of the site, nearly to the West Fork Mill Creek channel. Changes in surface elevation along the central portion of the R-O-W suggest approximately 15 - 20 feet of fill materials had been placed in the central portion of the site by this time (thickening to the east, towards the channel). The CAGIS map, based

on aerial photography from 2001, shows an increase in elevation of the southeastern portion of the parcel.

Copies of topographic maps and surveys are presented in Appendix D.

## 2.6 Chain-of-Ownership Information

As previously noted the site was formerly part of parcel 192-0065-0121. The City of Cincinnati purchased the site from the South Cumminsville Community for Better Housing, Inc. on November 14, 2002, after which the site became parcel 192-0065-0131.

ATC performed a chain-of-title search for the 3740 Cass Avenue (parcel 192-0065-0121) at the Hamilton County Records office. Historic property ownership is summarized in tabular form below, in reverse chronological order.

Date	Purchaser	Previous Owner
11/14/02	South Cumminsville Community for Better Housing, Inc.	Not [REDACTED]
4/15/91	Not [REDACTED]	Practical Family Living Center, Inc.
12/29/87	Practical Family Living Center, Inc.	Not Responsive [REDACTED]
12/31/84	Not Responsive [REDACTED]	Rev Realty Co., Inc. Not [REDACTED] Not [REDACTED]
10/14/82	Rev Realty Co., Inc. and Howard Revelson	Rev Realty Co., Inc. Not [REDACTED] [REDACTED] Respon Trustees
1/11/82	Rev Realty Co., Inc. Not [REDACTED] [REDACTED] Respon Trustees	Not [REDACTED] [REDACTED] [REDACTED] Trustees
11/16/70	Not [REDACTED] [REDACTED] [REDACTED] Trustees	Rev Realty Co., Inc. Not Responsive Not Responsive [REDACTED]
11/10/70	Rev Realty Co., Inc. Not Responsive Not Responsive [REDACTED]	Rev Realty Co., Inc.
2/2/65	Rev Realty Co., Inc.	Not Responsive [REDACTED]
10/22/63	Not Responsive [REDACTED]	[REDACTED]
5/31/63	Not Responsive Not [REDACTED]	[REDACTED]
7/30/59	Not [REDACTED] Respons	Not Responsive [REDACTED]

2/6/51	Not Responsive		
5/29/48			
1/16/46			N
6/14/05			O

Copies of property transfer records are presented in Appendix E.

## 2.7 Building Department Records

ATC reviewed building department records at the City of Cincinnati Building Department for Cass and Herron Avenues. Records were not available for the current or historic site address.

## 2.8 Fire Department Records

ATC contacted the City of Cincinnati Fire Department regarding any underground storage tanks, aboveground storage tanks, or petroleum leaks or spills at the site and/or at historic site address. Records were not available for the current or historic site address.

## 2.9 Interviews

ATC conducted interviews regarding site history with Not Responsive, a resident of Herron Avenue, and Not Responsive, a current resident of Powers Street and a lifelong resident of South Cumminsville.

Not indicated that she moved into the residence located at 3707 Herron Avenue in 1969, and at that time fill materials were not present on the site. She indicated that the trucks began dumping materials at the site a couple of years after she moved in, and that the trucks accessed the site during the day. She was not aware of the origin of the fill materials and did not recall any specific company name on the trucks.

[Not] a resident of 1935 Powers Street is a lifelong resident of the community [No] [Not] indicated that the Creek was reconfigured and lined with concrete around 1930. He indicated that at that time the site was utilized for residential purposes. He also indicated the site owner, [Not Responsive], grew vegetables and operated a 'truck garden' (a vegetable sales business).

## 2.10 Historical Summary

From the sources described herein, it is apparent that the northern portion of the site was utilized for residential and agricultural purposes from the late 1880s to the 1960s. From at least 1869 to 1905, the parcel was owned by private individuals and likely utilized for residential and agricultural use. From 1905 to approximately 1948 the parcel was owned by [Not Responsive], who reportedly utilized the land as a residence, and also to grow and sell vegetables.

This parcel was purchased by [Not Responsive] in 1963, and subsequently was transferred to the Rev Realty Co. [Not Responsive] until 1987. Based on interviews, aerial photographs and topographic maps, the majority of filling appears to have occurred during the early 1970's. Filling operations appear to have been generally completed by 1975.

Fill materials encountered during recent geotechnical evaluation of the site were predominantly foundry sands, up to 17 feet thick along the R-O-W. "Petroleum odors" were noted from 4 – 25 feet in a boring located east of the central portion of the R-O-W.

### 3.0 GEOPHYSICAL SURVEY

ATC retained Mundell & Associates, Inc. (Mundell) of Indianapolis, Indiana to perform a geophysical survey at the site. The purpose of the survey was to investigate the extent and geometry of potential buried 55-gallon drums of waste at the site, given the discovery of such materials within the R-O-W. Accordingly, a metal detection survey was conducted in a grid pattern over the R-O-W.

The survey was conducted on April 15, 2003. Mundell collected metal detection data using a Geonics EM-61 MKII detector. ATC personnel assisted the Mundell geophysicist in setting up a grid over the R-O-W area, and with data collection. Geophysical data was continuously collected, using a datalogger and global positioning system tracker, with data recorded in one second intervals. A copy of the *Geophysical Investigation Report* prepared by MUNDELL, dated April 30, 2003 is presented in Appendix F.

The data collected by Mundell revealed occurrences of numerous sporadically placed metallic objects throughout the site. Geophysical data was contoured, and a color scale used to illustrate survey findings. Gross readings (indicative of "total" readings, including both surficial and buried metallic signatures) are illustrated in Figure 1 of the Mundell report (Appendix F). Data suggests a pervasive presence of metallic objects (typical of landfills) throughout the site.

Differences between metallic detection channels may be used to interpret metallic properties at depth in the subsurface. A channel difference map is presented in Figure 2 of the Mundell report, and illustrates buried metallic objects. Such data indicates that the majority of the metallic objects in the area are either at or near the surface. However, several strong anomalies are present in the northern two-thirds of the site (with the greatest concentration in the central portion of the R-O-W, near the area in which the drums were encountered on-site).

Larger, regular-shaped anomalies (shown in deeper red/orange colors and surrounded by a blue hatched contour in Figure 2 of the Mundell report, presented in Appendix F of this document) are indicative of a high density of buried metallic objects, and could represent

buried drums. Other isolated or irregularly shaped anomalies are also indicative of buried metallic objects, but are less likely to represent the presence of buried drums. The largest anomaly located in the north-central portion of the site represents a laterally extensive significant area of buried metal, potentially consistent with systematic drum burial.

#### 4.0 CONCLUSIONS AND RECOMMENDATIONS

Industrial wastes (predominantly foundry sand), including numerous 55-gallon drums (at least some of which have been found to contain apparent spent solvent/petroleum products), appear to have been placed at the site during an approximate period between 1970 and 1975. The site was owned by Trustees of Howard and Isodore Revelson during this time. The generator(s) of the waste is unknown. Fill materials/wastes encountered have included construction debris, domestic items, tires, automobile parts, 55-gallon drums, as well as foundry sands and mold materials.

Metallic anomalies at depth beneath the R-O-W suggest the potential presence of significant buried drum repositories. Three distinct anomalies along the northern half of the R-O-W may represent repositories of over 100 drums each. Other irregularly shaped anomalies are less likely to, but could represent significant drum accumulations.

Further investigation is recommended to: i) further constrain the origin of the industrial waste placed at the site, and ii) determine the nature of the metallic anomalies detected. Additional interviews and focused research should be conducted to investigate the generators and responsible parties for waste placed at the site. Test pits should be excavated in areas of metallic anomalies to investigate the source of the anomalies. Pits should be excavated systematically, such that the orientation and nature of potential drum repositories (i.e., systematically placed and/or stacked vs. randomly placed/isolated) may be ascertained. Such information is necessary to more accurately estimate the number of drums present, such that an appropriate remedial plan can be developed.

The remedial plan for the project should be based upon the proposed end-use for the site. Although this study is limited to the R-O-W, it is our understanding that utility lines along this area will potentially service adjacent properties that are planned for residential redevelopment. Utility corridors could provide artificial conduits for contaminant migration. Future pre-remedial investigation should adequately quantify soil and groundwater conditions, to ensure that the project does not create an unacceptable health risk to construction workers (i.e., during sewer line completion) and/or potential occupants/visitors (i.e., end-users) at properties along the R-O-W. Any "construction spoils" (potentially

distinct from remedial-generated wastes) to be generated from the construction of Herron Avenue (and completion of its associated utility corridor) should be adequately characterized to facilitate the appropriate and efficient management of such materials.

## **APPENDICES**

### FIGURES

Figure 1 - Area of Study Map

Figure 2 - Site Location Map

### APPENDIX A

Hamilton County Atlas Maps

### APPENDIX B

Sanborn Fire Insurance Maps

### APPENDIX C

Aerial Photographs

### APPENDIX D

Topographic Maps and Surveys

### APPENDIX E

Property Transfer Records

### APPENDIX F

Geophysical Investigation Report (Mundell & Associates, Inc.)

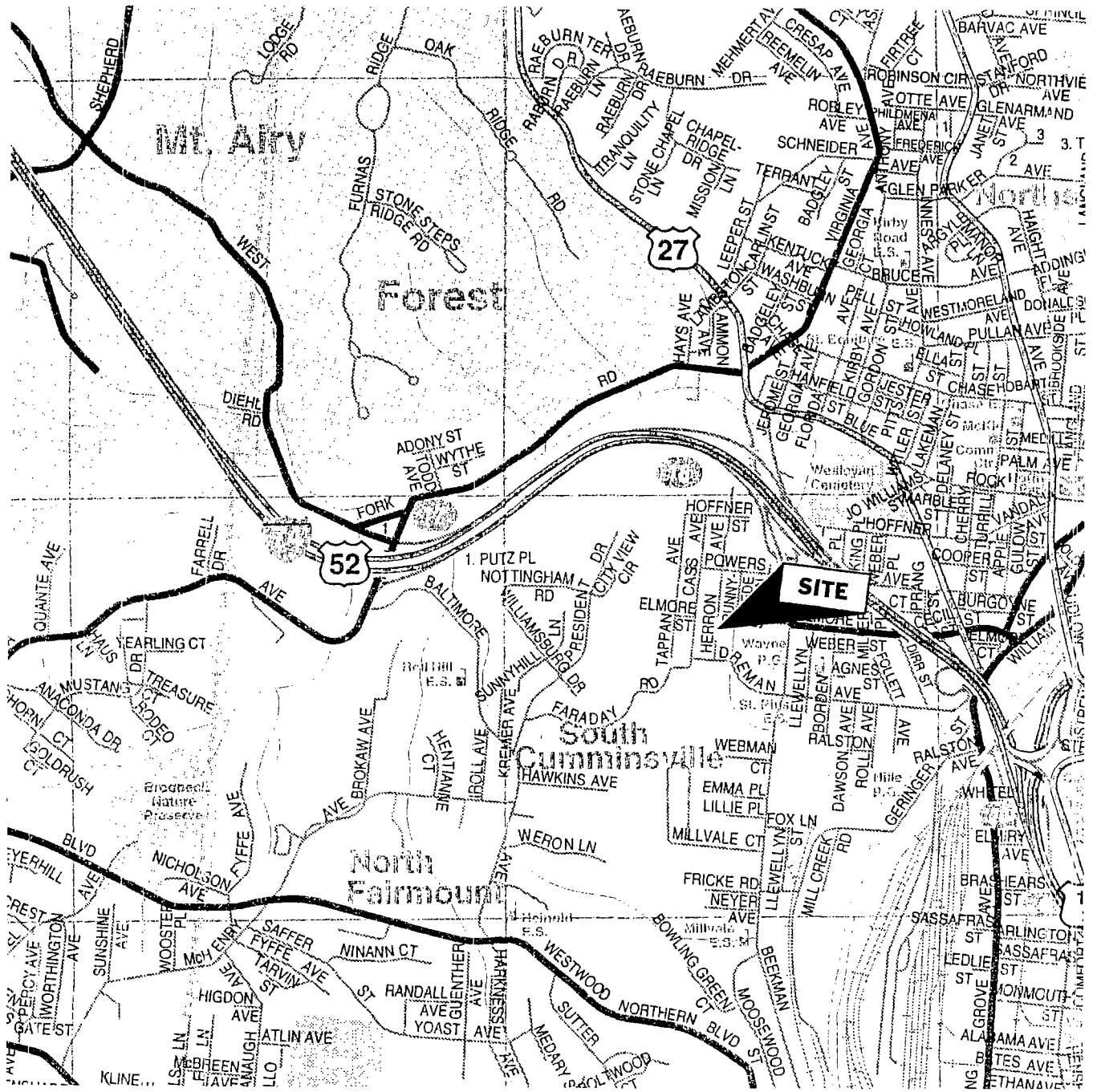
FIGURES

[illegible]

**AREA OF STUDY**  
Herron Avenue Project  
Cincinnati, Ohio

### Figure 1





Source: UniversalMap, Hamilton County, Ohio Highway Map



## SITE LOCATION MAP

Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
6/4/03

DRAWN BY:  
KHB

REVIEWED  
BY: NJL

SCALE:  
1 in. = 1,980 ft

Figure No.:

2



APPENDIX A



Source: Titus, Atlas of Hamilton County.



# ATLAS MAP OF HAMILTON COUNTY – 1869

Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

DRAWN BY:  
JR

REVIEWED BY:

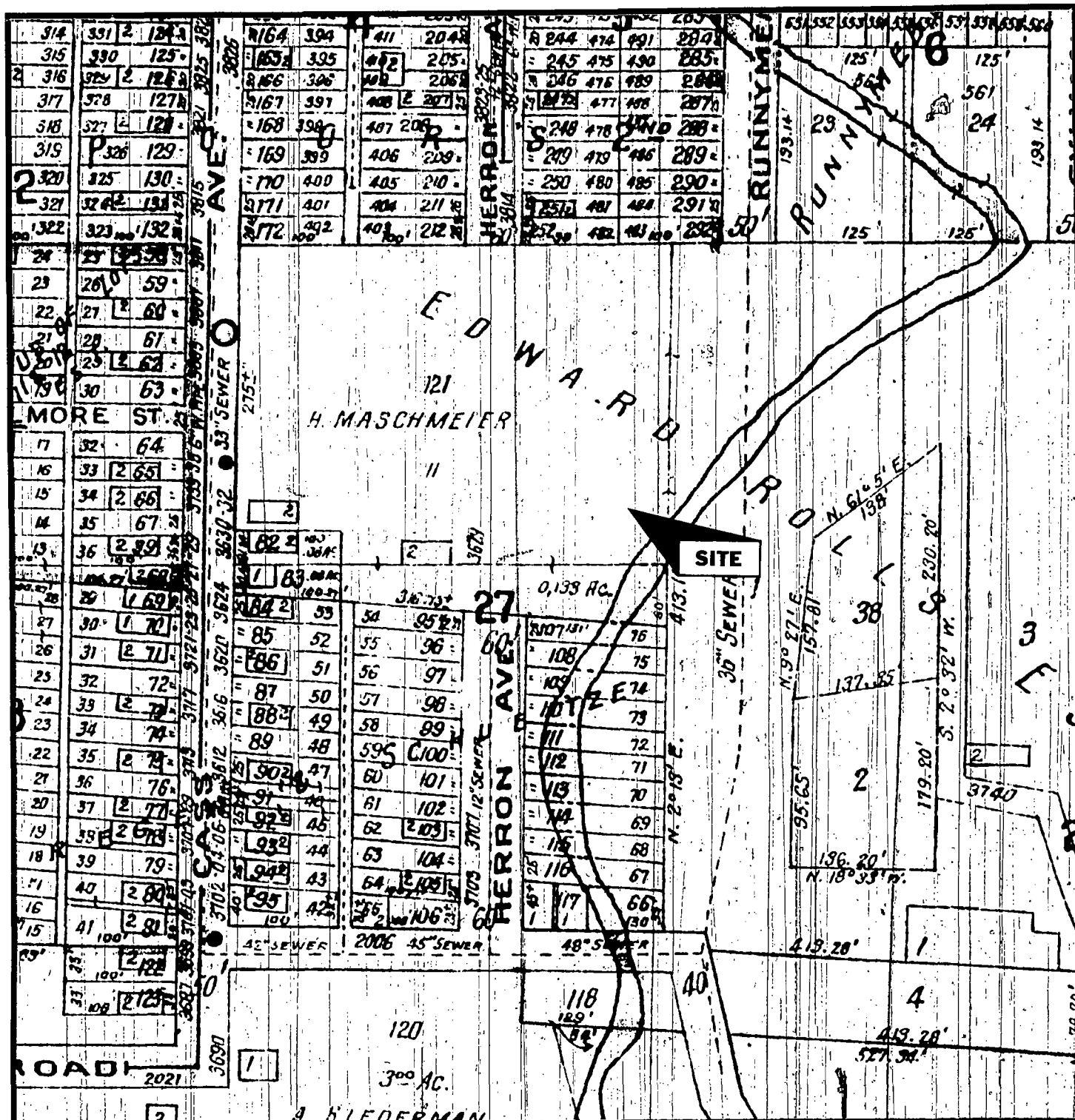
NTS

Appendix:  
A





APPENDIX B



Source: Cincinnati/Hamilton County Public Library, Cincinnati, Ohio.



# SANBORN MAP – 1922

Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

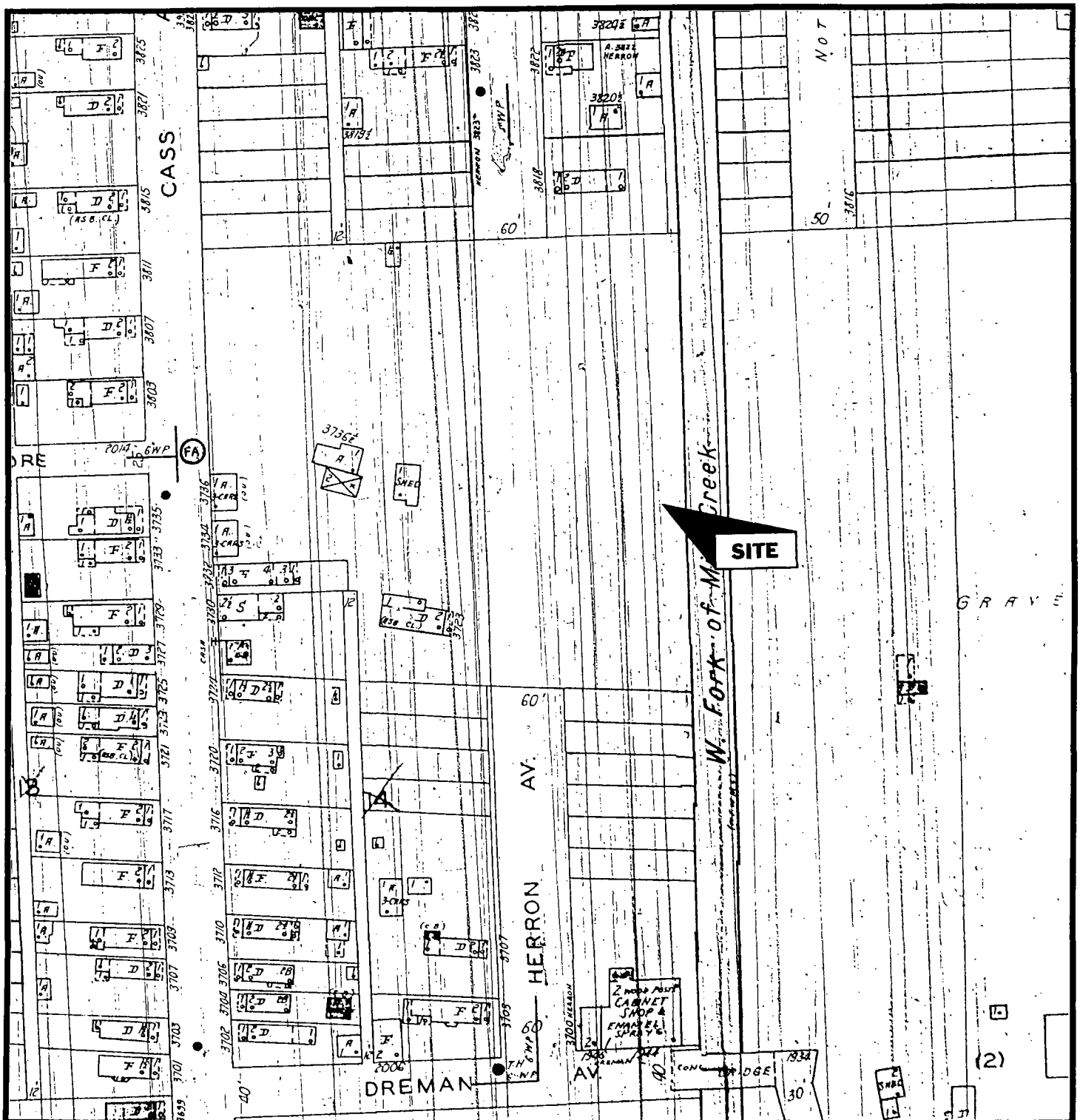
DRAWN BY:  
JR

REVIEWED BY:  
[Signature]

SCALE:  
NTS

Appendix:  
B

**VATC**  
ASSOCIATES INC.



Source: Cincinnati/Hamilton County Public Library, Cincinnati, Ohio.



**SANBORN MAP – 1934-1937**  
Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

DRAWN BY:  
JR

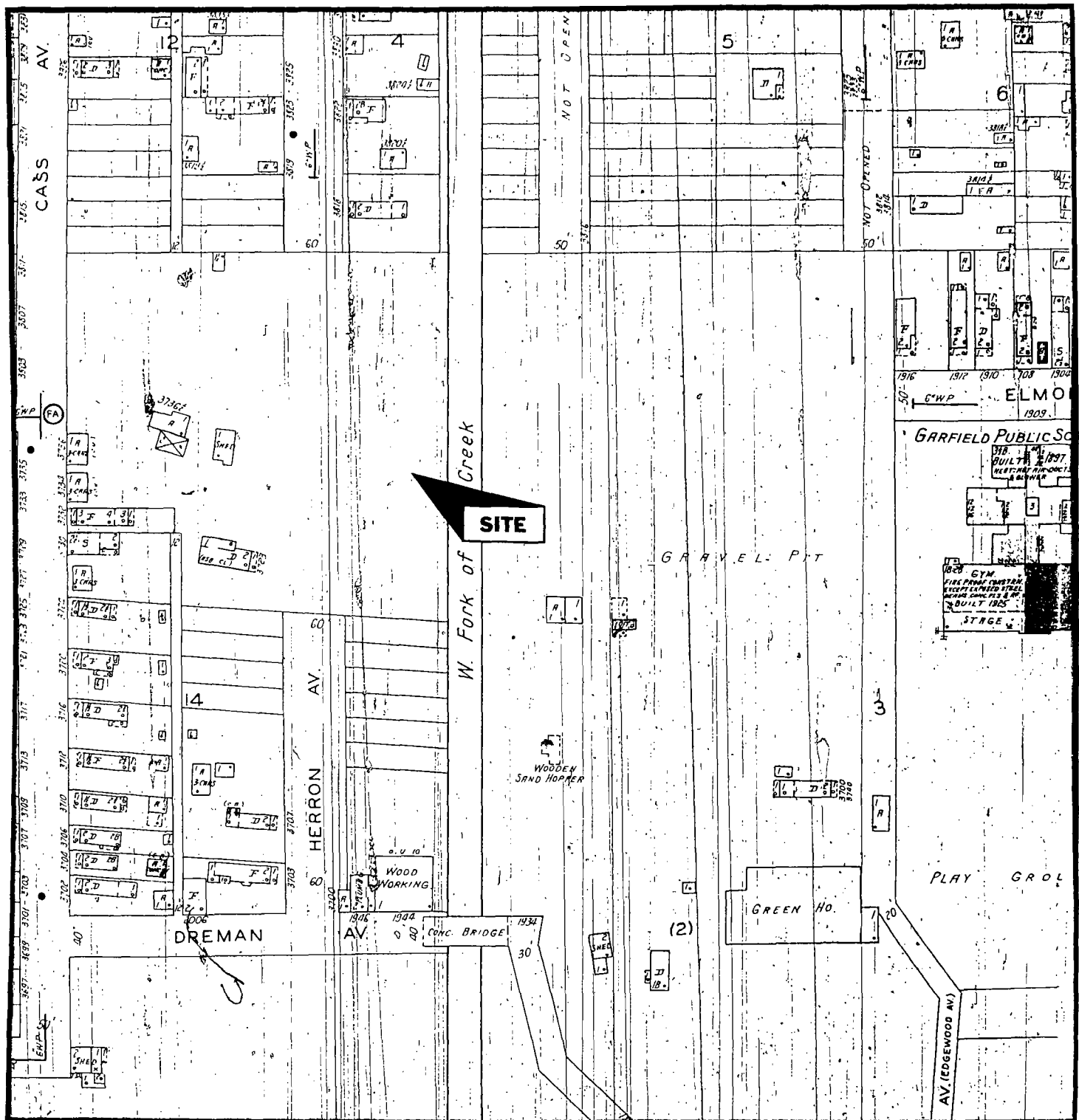
REVIEWED BY:

SCALE:  
NTS

Appendix:

B

**VATC**  
ASSOCIATES INC.



Source: Cincinnati/Hamilton County Public Library, Cincinnati, Ohio.



**SANBORN MAP – 1937**  
Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

DRAWN BY:  
JR

REVIEWED BY:

SCALE:  
NTS

Appendix:

B

**VATC**  
ASSOCIATES INC.



Source: Cincinnati/Hamilton County Public Library, Cincinnati, Ohio.



# **SANBORN MAP – 1937-1961**

Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

DRAWN BY:  
JR

REVIEWED BY:  
*[Signature]*

SCALE:  
NTS

Appendix:

B

**VATC**  
ASSOCIATES INC.

APPENDIX C



Source: Hamilton County Parks Department.



**AERIAL PHOTOGRAPH – 1931**  
Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

DRAWN BY:  
JR

REVIEWED BY:  
*[Signature]*

SCALE:  
1in. ~ 270 ft.

Appendix:  
C

**VATC**  
ASSOCIATES INC.



**Source:** Hamilton County Parks Department.



**AERIAL PHOTOGRAPH – 1932 (Compiled  
From Late 1920s Flight)**

Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

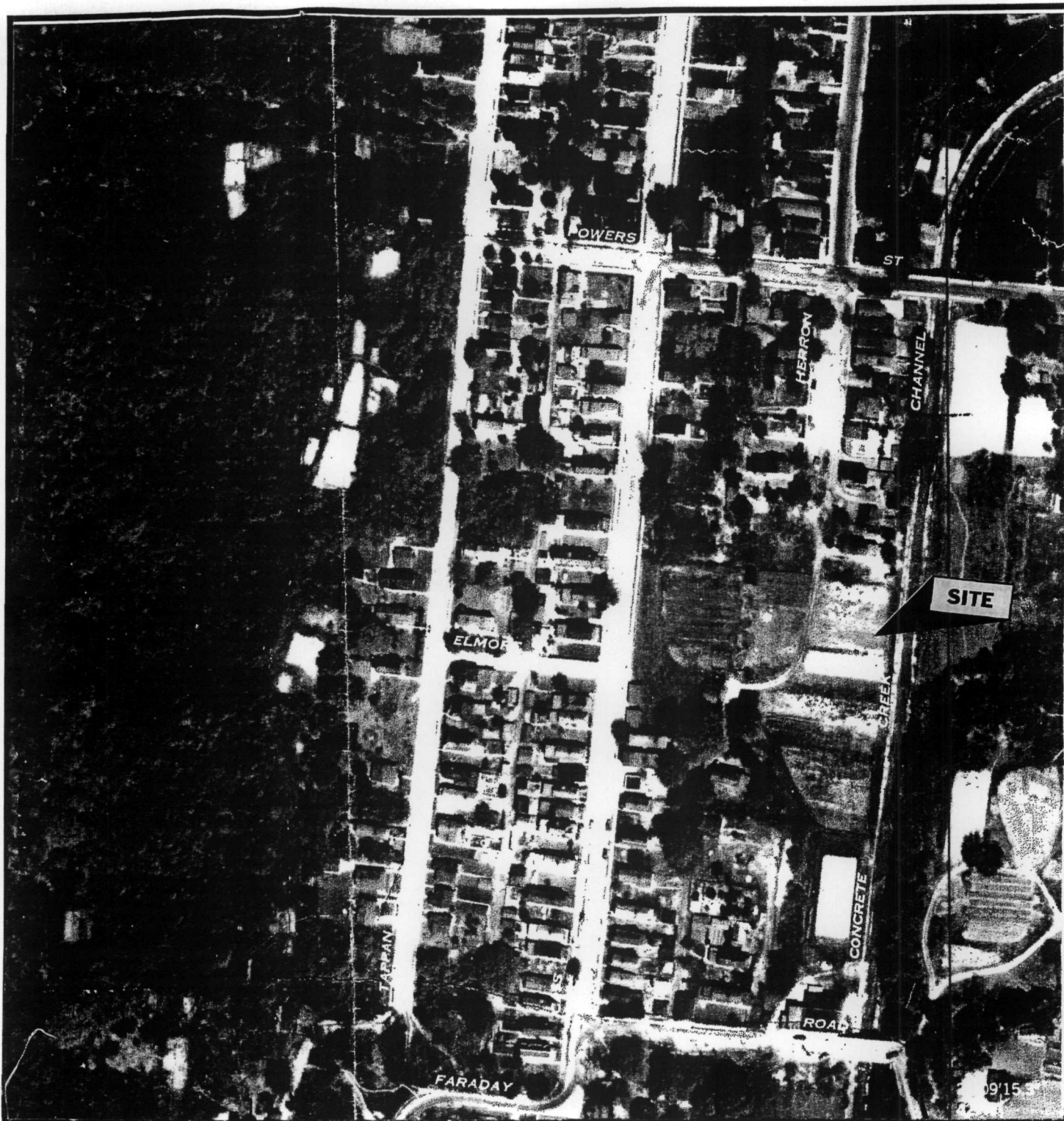
**DRAWN BY:**  
JR

**REVIEWED BY:**  


**SCALE:**  
1in. ~ 270 ft.

**Appendix:**  
C

  
**ASSOCIATES INC.**



Source: Hamilton County Engineer's Office



# **AERIAL PHOTOGRAPH-1948**

Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

DRAWN BY:  
JR

REVIEWED BY:  
*[Signature]*

SCALE:  
1in. ~ 200 ft.

Appendix:

C

**VATC**  
ASSOCIATES INC.



Source: Ohio Department of Transportation.



**AERIAL PHOTOGRAPH – 1958**  
 Herron Avenue Project  
 Cincinnati, Ohio

PROJECT NO.:  
 72.24907.0001

DATE:  
 5-8-03

DRAWN BY:  
 JR

REVIEWED BY:  
*[Signature]*

SCALE:  
 1in. ~ 250 ft.

Appendix:  
 C

**VATC**  
 ASSOCIATES INC.



Source: Ohio Department of Transportation.



**AERIAL PHOTOGRAPH – 1960**  
Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

DRAWN BY:  
JR

REVIEWED BY:  
*[Signature]*

SCALE:  
1in. ~ 250 ft.

Appendix:  
C

**VATC**  
ASSOCIATES INC.



**Source:** Ohio Department of Transportation.



**AERIAL PHOTOGRAPH – 1962**  
 Herron Avenue Project  
 Cincinnati, Ohio

**PROJECT NO.:**  
 72.24907.0001

**DATE:**  
 5-8-03

**DRAWN BY:**  
 JR

**REVIEWED BY:**

**SCALE:**  
 1in. ~ 250 ft.

**Appendix:**  
 C





**Source:** Ohio Department of Transportation.



**AERIAL PHOTOGRAPH – 1973**  
Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

**DRAWN BY:**  
JR

**REVIEWED BY:**  
*[Signature]*

**SCALE:**  
1in. ~ 250 ft.

**Appendix:**  
C

**VATC**  
ASSOCIATES INC.



**Source:** Hamilton County Natural Resource Conservation District



**AERIAL PHOTOGRAPH- 1975**

Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

**DRAWN BY:**  
JR

**REVIEWED BY:**  
*[Signature]*

**SCALE:**  
1in. ~ 330 ft.

**Appendix:**

C

**VATC**  
ASSOCIATES INC.



**Source:** Hamilton County Natural Resource Conservation District



**AERIAL PHOTOGRAPH- 1977**  
 Herron Avenue Project  
 Cincinnati, Ohio

**PROJECT NO.:**  
 72.24907.0001

**DATE:**  
 5-8-03

**DRAWN BY:**  
 JR

**REVIEWED BY:**  
*[Signature]*

**SCALE:**  
 1in. ~ 330 ft.

**Appendix:**

**C**

**VATC**  
 ASSOCIATES INC.



**Source:** Ohio Department of Transportation.



**AERIAL PHOTOGRAPH – 1981**  
Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

**DRAWN BY:**  
JR

**REVIEWED BY:**

**SCALE:**  
1in. ~ 260 ft.

**Appendix:**  
C

**VATC**  
ASSOCIATES INC.



**Source:** Ohio Department of Transportation.



**AERIAL PHOTOGRAPH – 1986**

Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

**DRAWN BY:**  
JR

**REVIEWED BY:**  
KPN

**SCALE:**  
1in. ~ 130 ft.

**Appendix:**

C





Source: Hamilton County Engineer's Office.



**AERIAL PHOTOGRAPH – 1989**  
 Herron Avenue Project  
 Cincinnati, Ohio

PROJECT NO.:  
 72.24907.0001

DATE:  
 5-8-03

DRAWN BY:  
 JR

REVIEWED BY:  
*[Signature]*

SCALE:  
 1in. ~ 440 ft.

Appendix:  
 C

**VATC**  
 ASSOCIATES INC.



**Source:** Ohio Department of Transportation.



**AERIAL PHOTOGRAPH – 1993**

Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

**DRAWN BY:**  
JR

**REVIEWED BY:**

**SCALE:**  
1in. ~ 260 ft.

Appendix:  
C





Source: Hamilton County Engineer's Office.



**AERIAL PHOTOGRAPH – 1996**  
Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

DRAWN BY:  
JR

REVIEWED BY:  
*[Signature]*

SCALE:  
1in. ~ 660 ft.

Appendix:  
C

**VATC**  
ASSOCIATES INC.



**Source:** Hamilton County Engineer's Office.



**AERIAL PHOTOGRAPH – 2001**  
Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

**DRAWN BY:**  
JR

**REVIEWED BY:**  
*[Signature]*

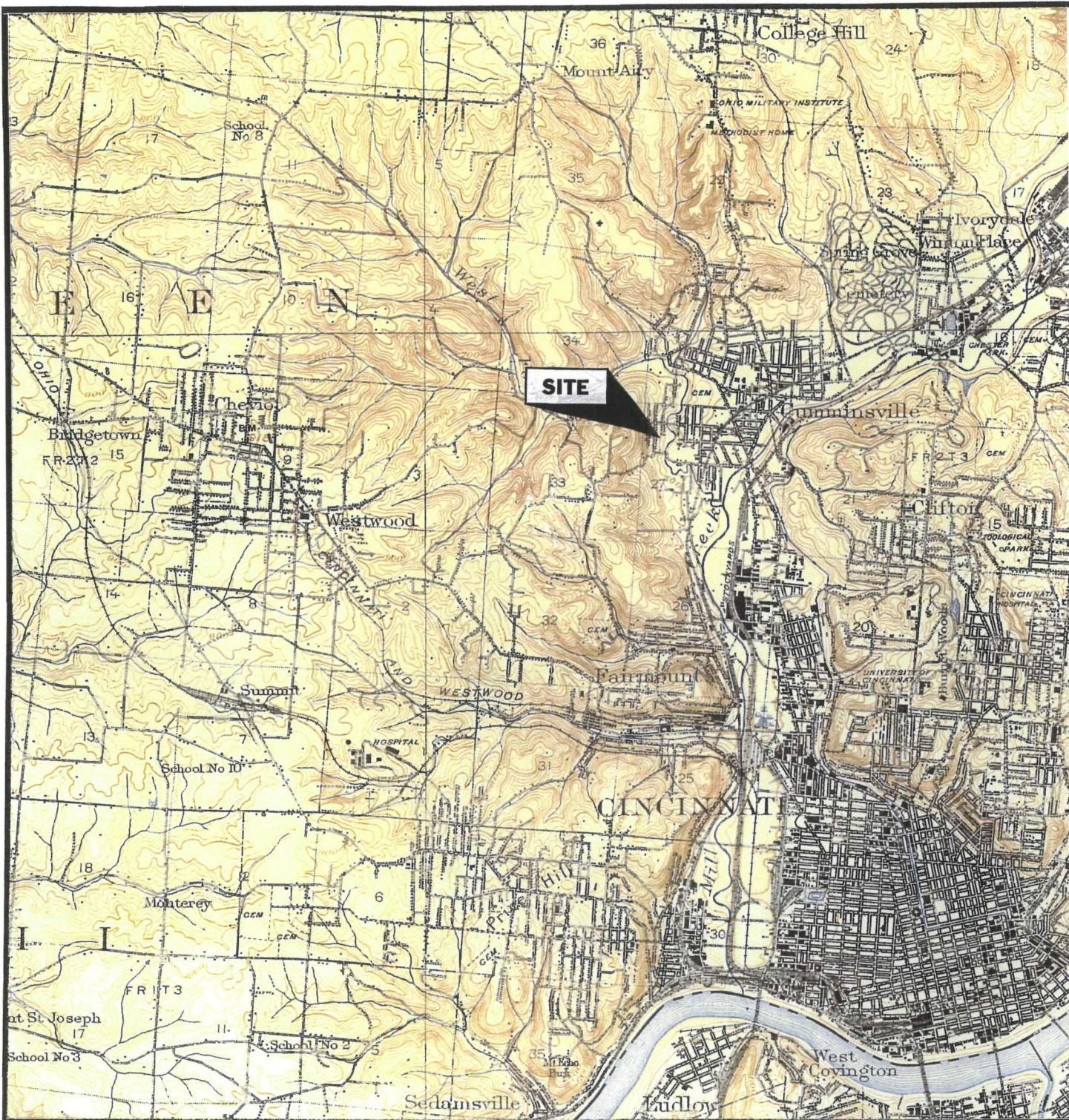
**SCALE:**  
1in. ~ 110 ft.

**Appendix:**

C

**VATC**  
ASSOCIATES INC.

**APPENDIX D**



**Source:** United States Geological Survey 7.5 Minute Topographic Map of Cincinnati West, Ohio Quadrangle (1914).



# **HISTORICAL TOPOGRAPHIC MAP**

Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

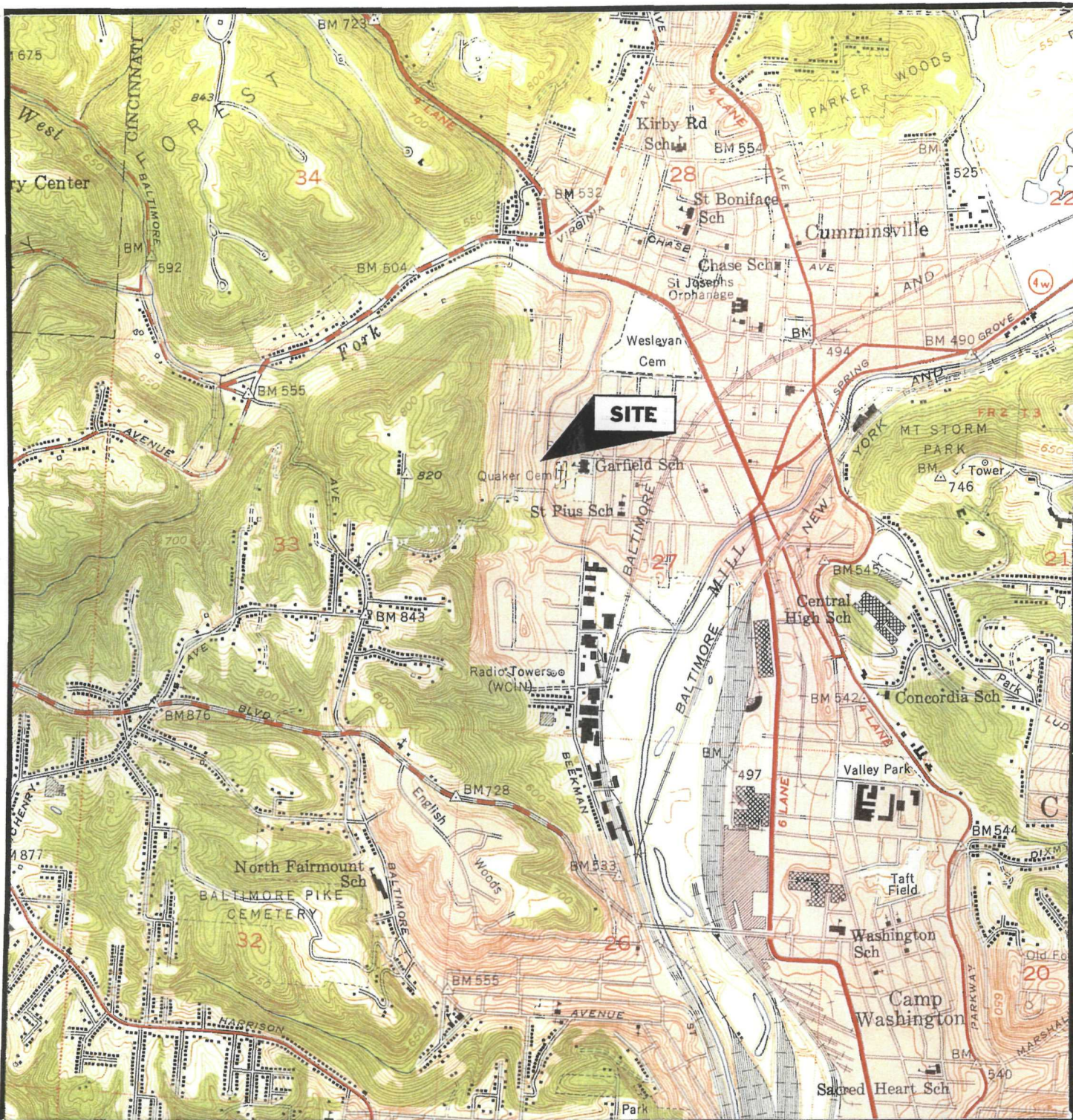
**DRAWN BY:**  
JR

**REVIEWED BY:**  
*[Signature]*

**SCALE:**  
1 in. = 2,000 ft.

Appendix:  
D

**VATC**  
ASSOCIATES INC.



Source: United States Geological Survey 7.5 Minute Topographic Map of Cincinnati West, Ohio Quadrangle (1953).



# **HISTORICAL TOPOGRAPHIC MAP**

Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

DRAWN BY:  
JR

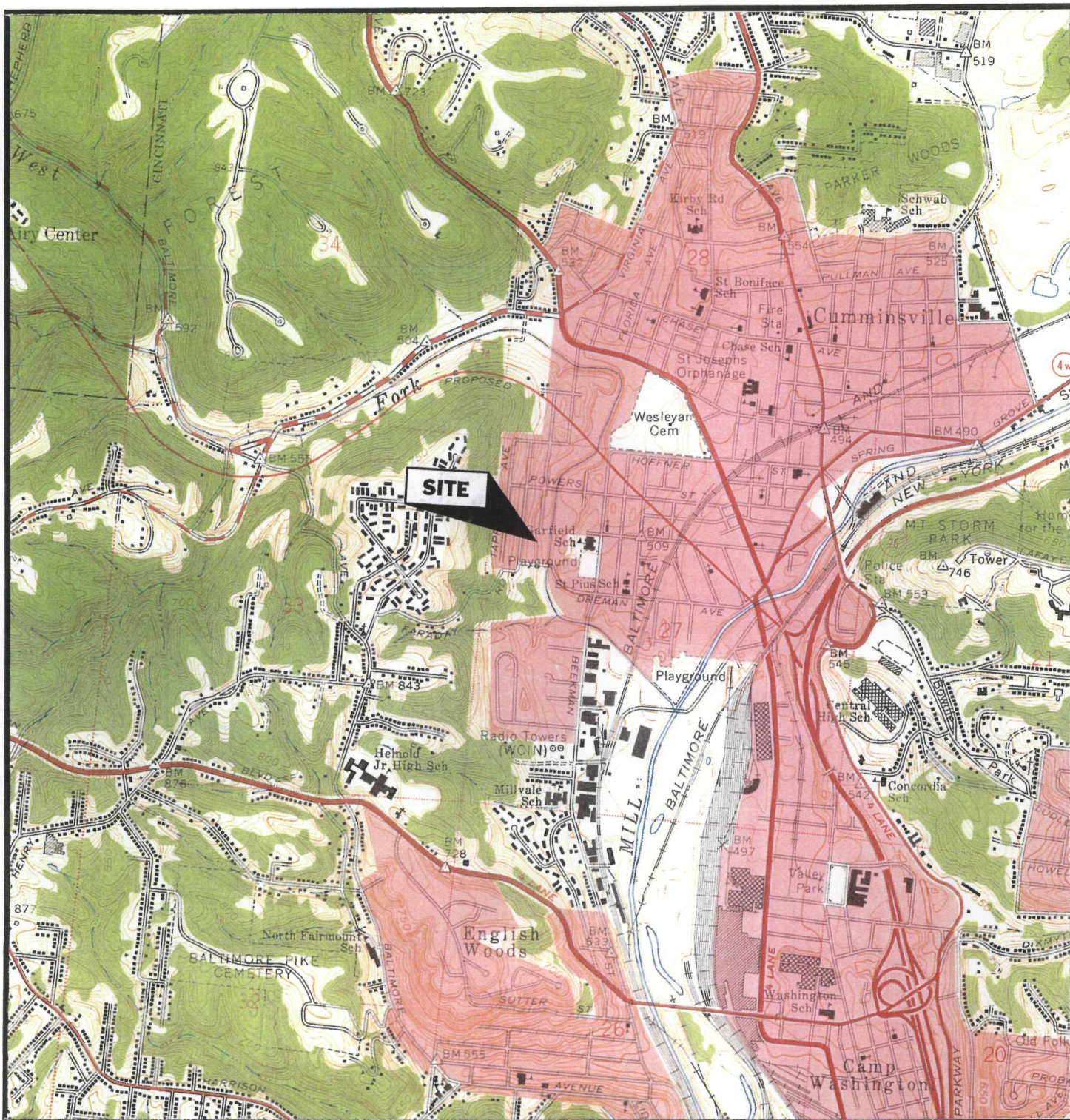
REVIEWED BY:  
*WBN*

SCALE:  
1 in. = 2,000 ft.

Appendix:

D

**VATC**  
ASSOCIATES INC.



**Source:** United States Geological Survey 7.5 Minute Topographic Map of Cincinnati West, Ohio Quadrangle (1961).



## HISTORICAL TOPOGRAPHIC MAP

Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

**DRAWN BY:**  
JR

**REVIEWED BY:**

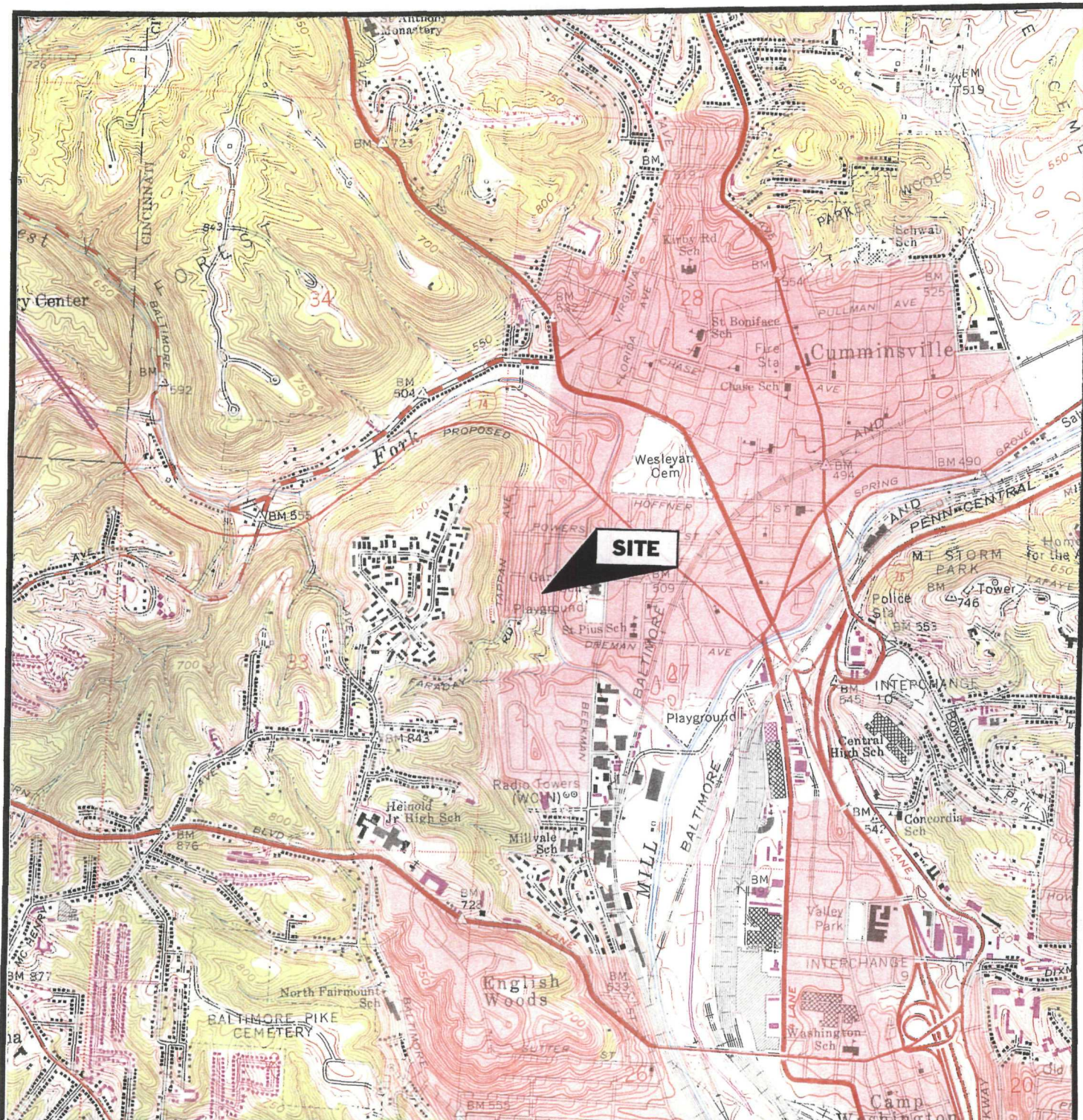
*[Signature]*

**SCALE:**  
1 in. = 2,000 ft.

Appendix:

D





**Source:** United States Geological Survey 7.5 Minute Topographic Map of Cincinnati West, Ohio Quadrangle (1961, photorevised 1970).



# **HISTORICAL TOPOGRAPHIC MAP**

Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

**DRAWN BY:**  
JR

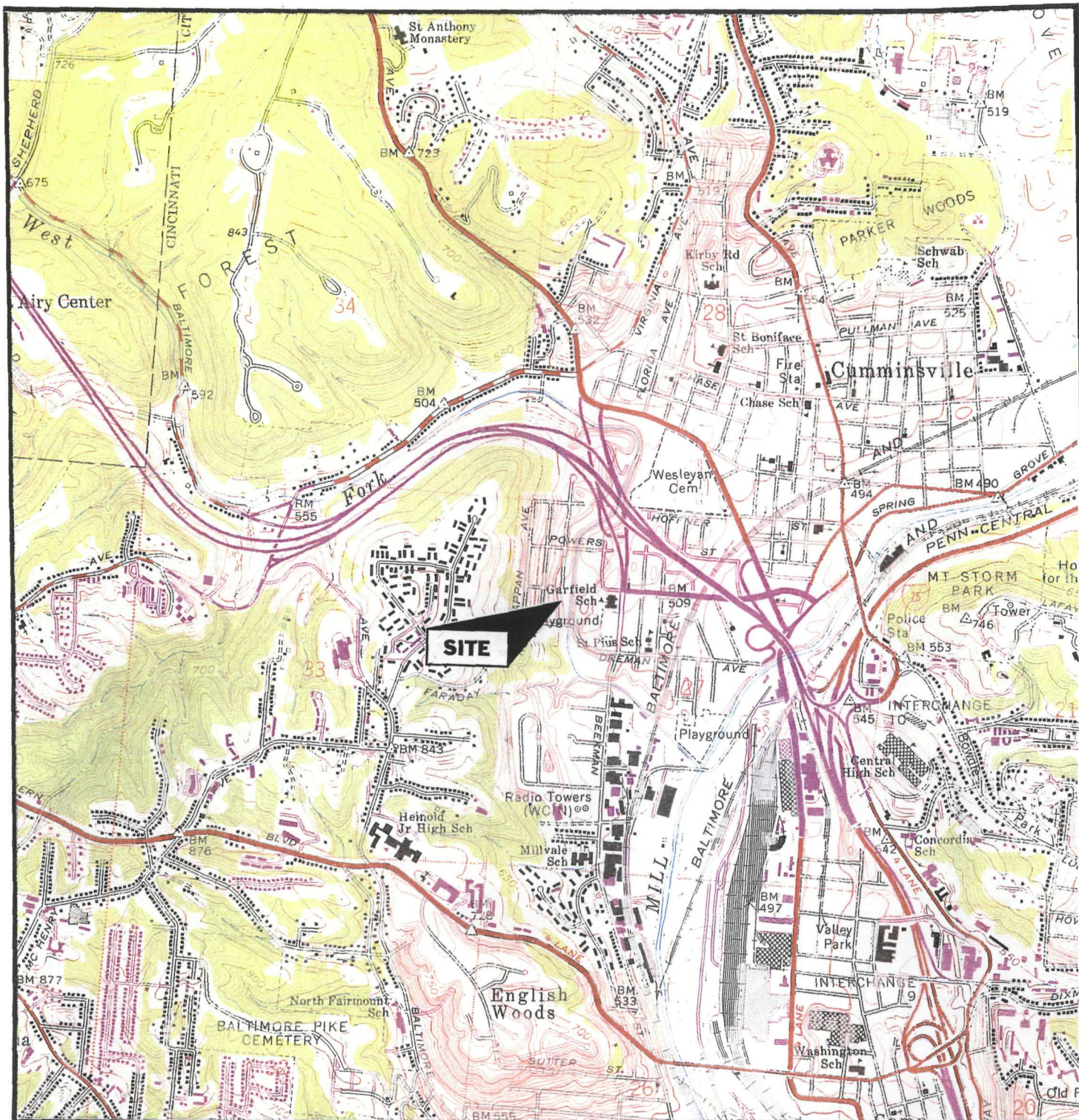
**REVIEWED BY:**  
*[Signature]*

**SCALE:**  
1 in. = 2,000 ft.

**Appendix:**

D

**VATC**  
ASSOCIATES INC.



**Source:** United States Geological Survey 7.5 Minute Topographic Map of Cincinnati West, Ohio Quadrangle (1961, photorevised 1975).



## HISTORICAL TOPOGRAPHIC MAP

Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

**DRAWN BY:**  
JR

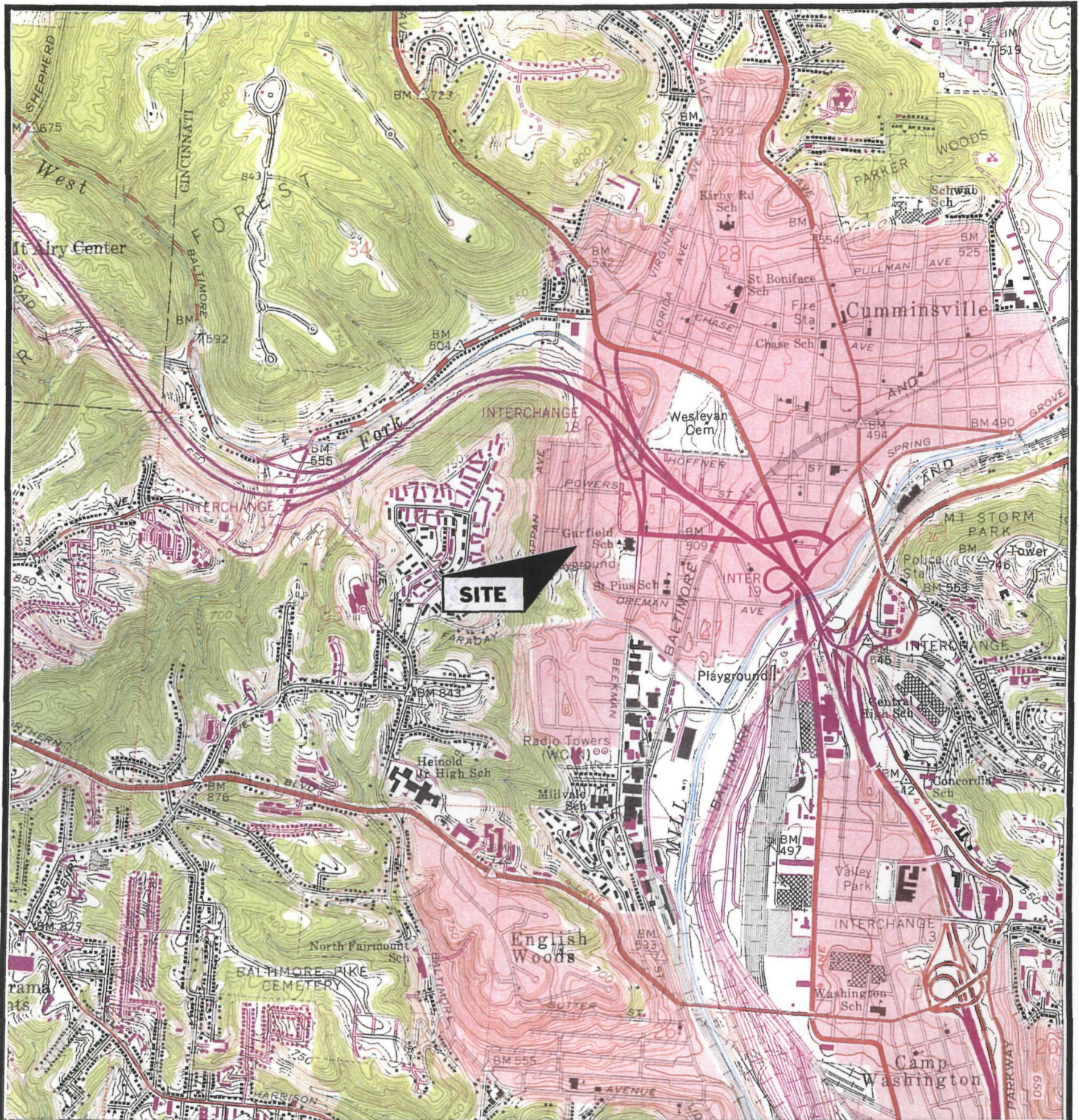
**REVIEWED BY:**  
Ken

**SCALE:**  
1 in. = 2,000 ft.

**Appendix:**

D

**VATC**  
ASSOCIATES INC.



**Source:** United States Geological Survey 7.5 Minute Topographic Map of Cincinnati West, Ohio Quadrangle (1961, photorevised 1981).



## HISTORICAL TOPOGRAPHIC MAP

Herron Avenue Project  
Cincinnati, Ohio

**PROJECT NO.:**  
72.24907.0001

**DATE:**  
5-8-03

**DRAWN BY:**  
JR

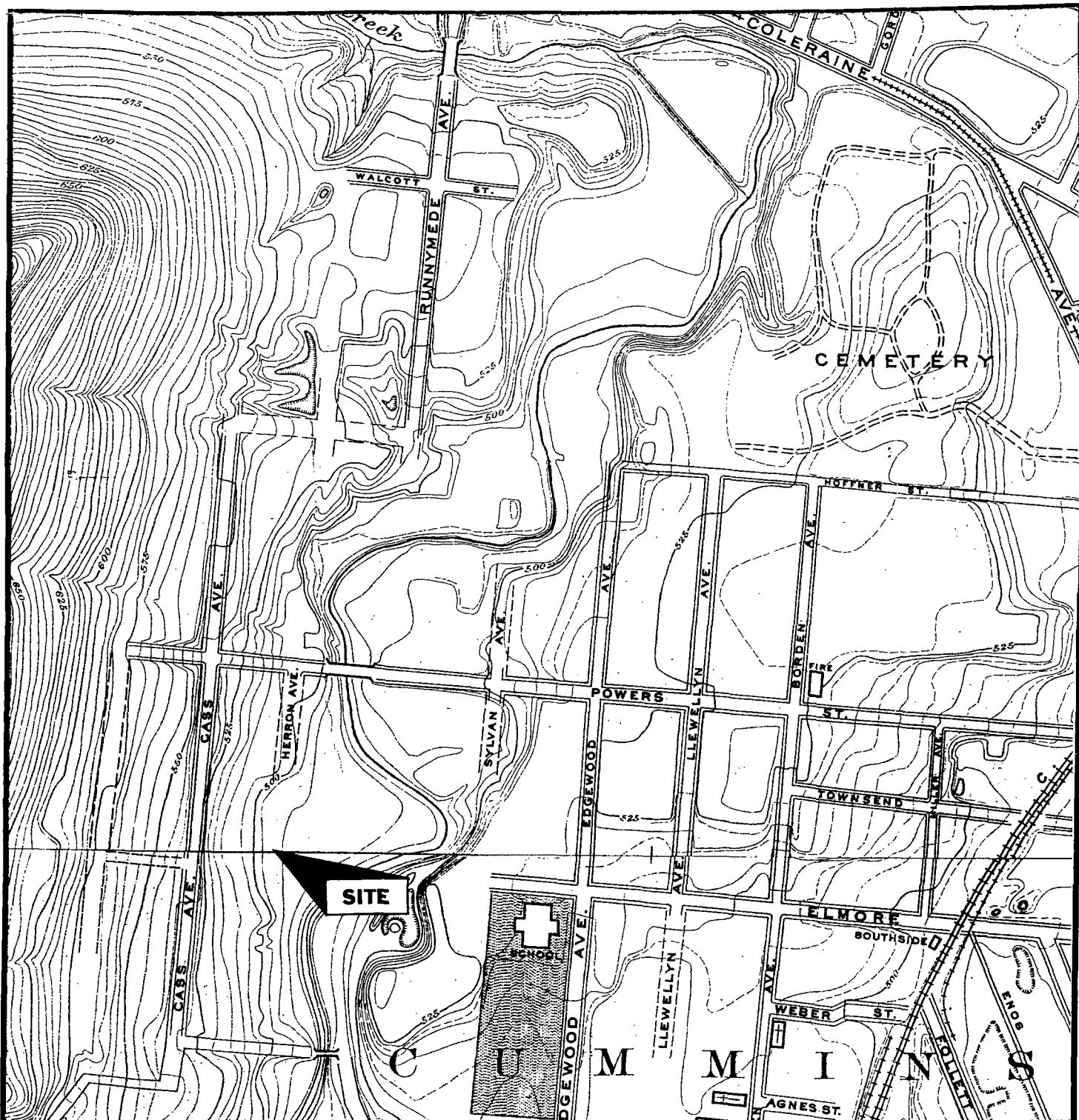
**REVIEWED BY:**  
*[Signature]*

**SCALE:**  
1 in. = 2,000 ft.

Appendix:

D

**VATC**  
ASSOCIATES INC.



Provided By: Mr. Jack Wachter with the City of Cincinnati.



**HISTORICAL TOPOGRAPHIC SURVEY OF  
CINICNNATI – 1912**  
Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

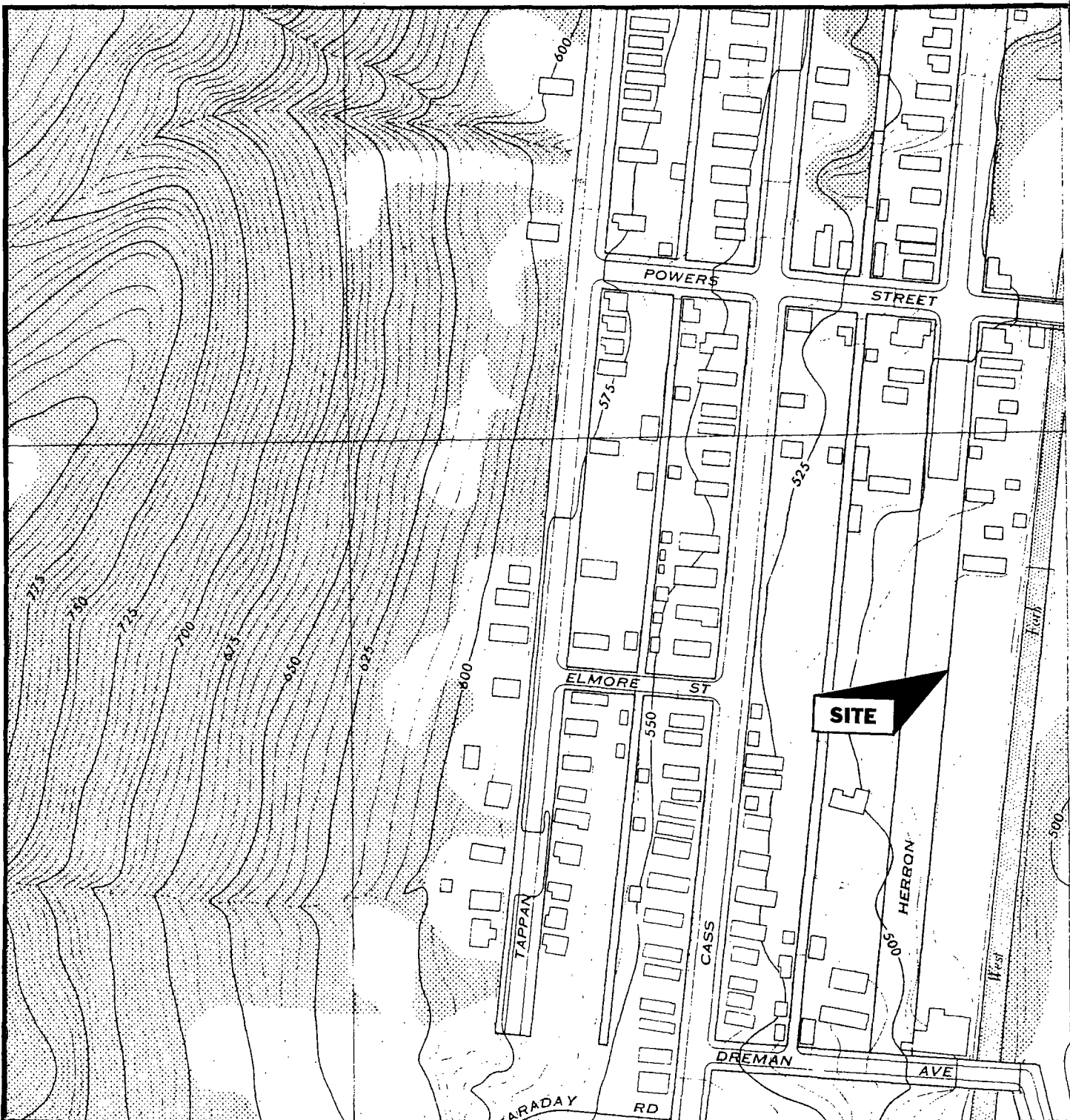
DRAWN BY:  
JR

REVIEWED BY:  
*[Signature]*

SCALE:  
1 in. = 400 ft.

Appendix:  
D

**VATC**  
ASSOCIATES INC.



Source: Hamilton County Engineer's Office.



**THE CITY OF CINCINNATI AND  
HAMILTON COUNTY METROPOLITAN  
TOPOGRAPHIC SURVEY MAP – 1952**

Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

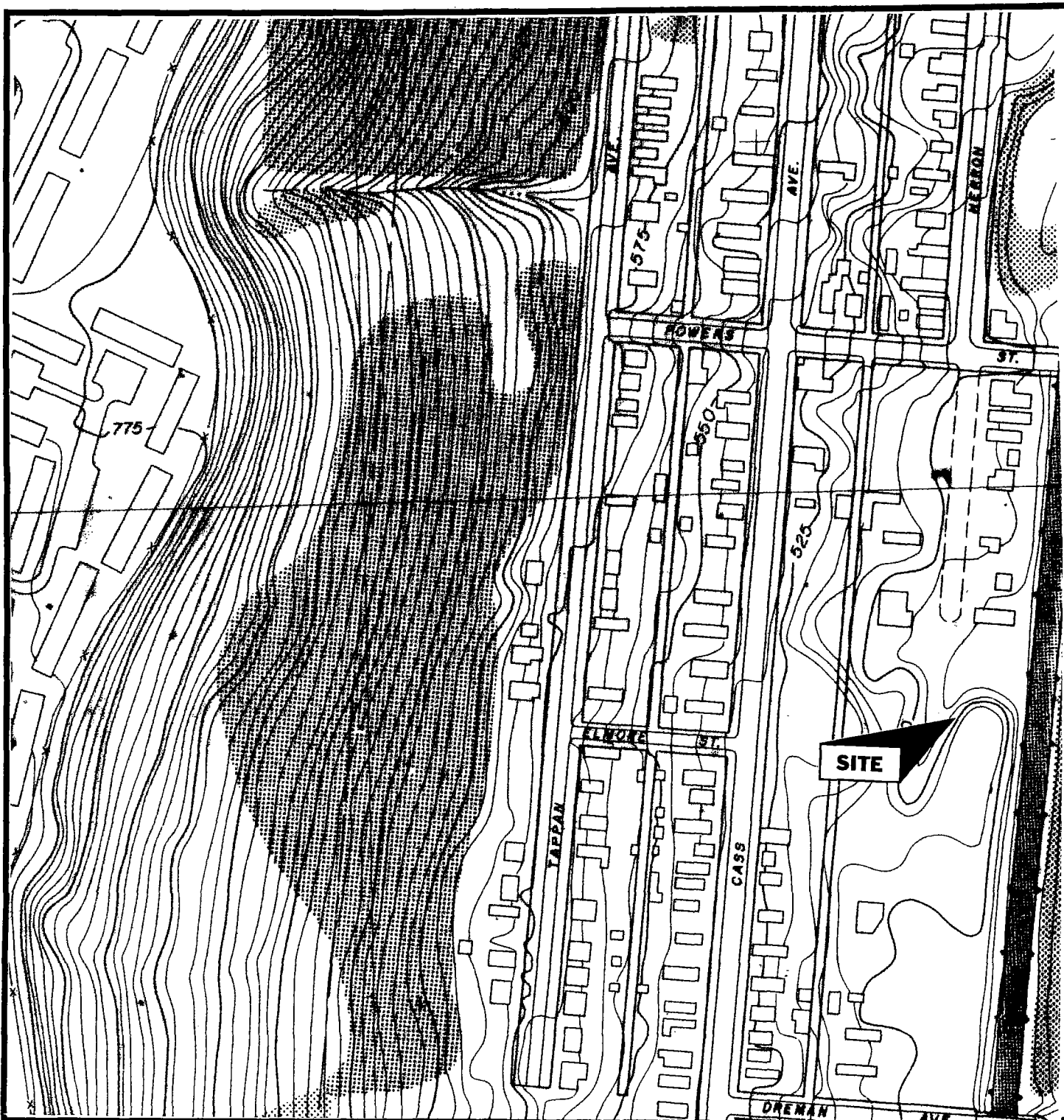
DRAWN BY:  
JR

REVIEWED BY:

SCALE:  
1in. ~ 200 ft.

Appendix:  
D

**VATC**  
ASSOCIATES INC.



Source: Hamilton County Engineer's Office.



**THE CITY OF CINCINNATI AND  
HAMILTON COUNTY METROPOLITAN  
TOPOGRAPHIC SURVEY MAP - 1975**

Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

DRAWN BY:  
JR

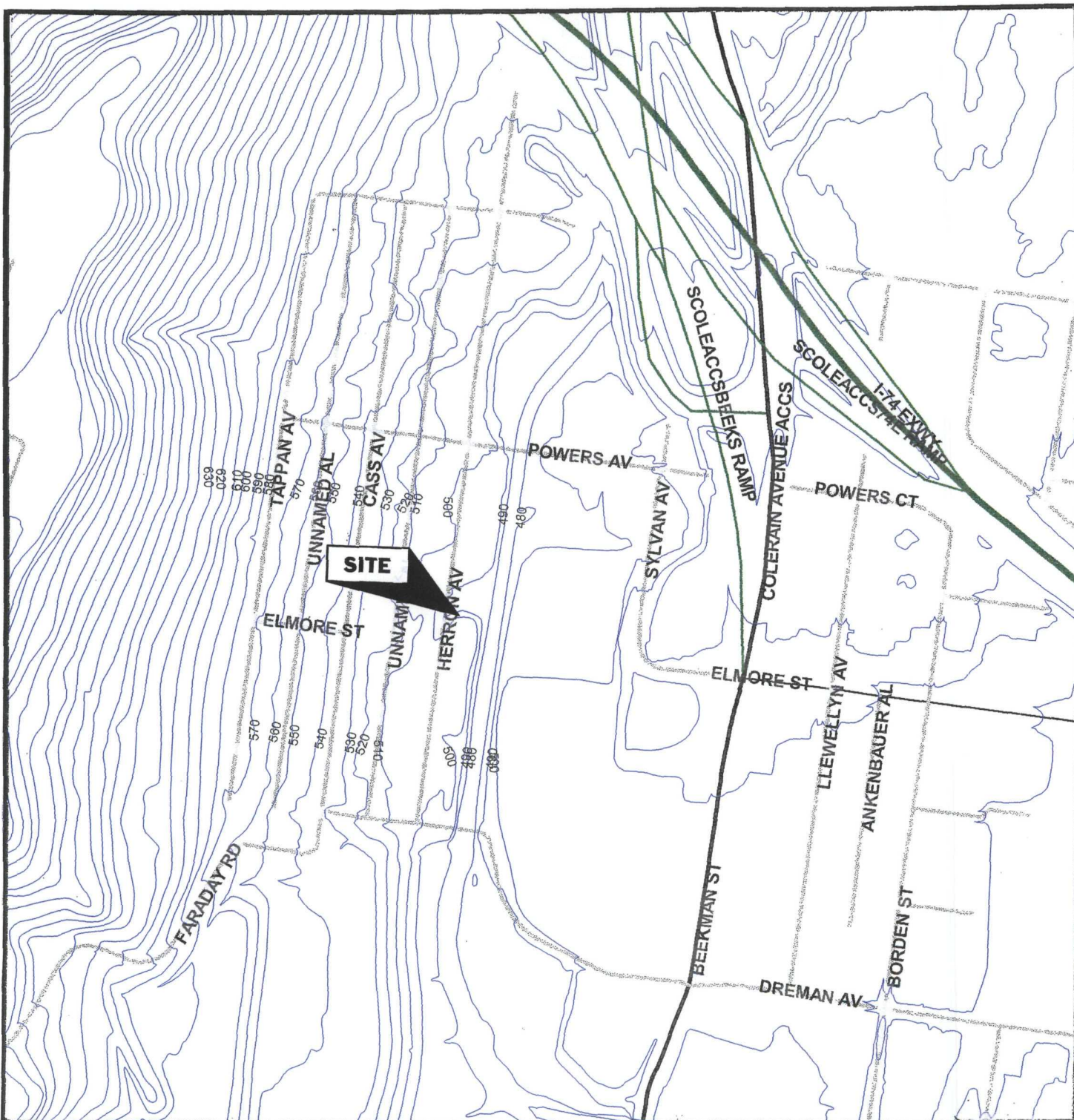
REVIEWED BY:  
*[Signature]*

SCALE:  
1 in. = 200 ft.

Appendix:

D

**VATC**  
ASSOCIATES INC.



Source: Mr. Jack Wachter with the City of Cincinnati



**CAGIS MAP-2002 (Contours Based on  
2001 Aerial Photography)**  
Herron Avenue Project  
Cincinnati, Ohio

PROJECT NO.:  
72.24907.0001

DATE:  
5-8-03

DRAWN BY:  
JR

REVIEWED BY:

SCALE:  
1in. ~ 400 ft.

Appendix:

D

**VATC**  
ASSOCIATES INC.

APPENDIX E



## Dusty Rhodes, Hamilton County Auditor

### Transfer

Parcel ID  
1 of 1

#### Parcel Info

Summary  
Residential  
Levy Info  
Improvements  
Commercial  
Similar Sales  
Transfer  
- Printable Tab  
Value History  
Payments  
Image  
Map  
Property Report

Parcel ID	Address	Index Order	Card(s)
192-0065-0121-00	3740 CASS AV	Parcel ID	1

### Transfer History

Deed Book Page	Sale Price	Sale Date	Previous Owner	Current Owner
	\$0	11/14/02	SOUTHCUMMINSVILLE COMMUNI	SOUTHCUMMINSVILLE COMMUNI TY U
	\$45,000	5/4/00	Not Responsive	SOUTHCUMMINSVILLE COMMUNI TY F
	\$5,000	4/15/91	Not Responsive	WELAGE ALBERT

#### Search By

Parcel ID  
Owner  
Street Address  
Sales  
Map

[Legal disclaimer](#) / [Privacy Statement](#)

Data updated on 05/09/2003

#### Site Functions

Property Search  
On-Line Help  
Comments  
Home  
Auditor's Home

BARCKMEIER, ROBERT  
7700 HENRY AVE  
MINTO, O 44120  
CARR AVE.  
MINTO, O 44120  
PT. LOT 11 W. C. ROLLER ESTATE

1 15 46 DOMMER, ERNST & MARIE O.  
5 22 48 BANGS, WILLIAM & BEA RALPH  
8 6 51 BATHURST, WILLIAM  
7 30 52 KIEDEL, ROBERT L. INC.  
6 28 53 KIEDEL, ROBERT L. INC. 1/2 ETAL 1/2  
10 22 53 REVELSON, HOWARD J. & MELVIN  
2 2 65 KEY REALTY CO. INC.  
11 16 70 REVELSON, HOWARD & ISIDORE REVELSON, TRUSTEES  
12 10 71 KEY REALTY CO. INC. 1/2 ETAL 1/2 REVELSON, HOWARD & MELVIN 1/2 FOR 10% 12-22-71  
1 11 82 KEY REALTY CO. INC. 1/2 & REVELSON, JAY D. & HERMAN, PAUL W. CO.

TAX CODE

DATE	CUT-UP	BALANCE	VALUATION	CHANGES	CUT-UP OUT OF PANEL					
WH	DA	YE	PARCEL	FEET OR ACRES	FEET OR ACRES	NAME	DEEDING	TOTAL	RECORD	NO.
						2720	1880	4600		
						7800	1880	4600		
						7800	1900	4700		
						3080	2070	5150		
						2940	2920	5860		
						1940	3080	5020		
						1100	380	1480		
							240	260		
						1100	-	1100		
						1430	-	1430		

REAL ESTATE TAX LIST

SEE DUCHENNEVILLE, ALBERTA

NAME OF LAND

SECTION OF LAND

Form No. 1-610-2220

Legal disclaimer / Privacy Statement

Data update

### REAL ESTATE PARLIST

441-455, 550-565, 640-655, 730-745

### ANALYSIS OF RESULTS

1. **المادة 1**

Data update

282

In Testimony Whereof, I have hereunto subscribed  
my name and affixed my Notarial seal  
on the day and year last aforesaid.

TRANSEFERRED  
JAN 16 1946  
JAN 16 1946  
Geo. C. Kuhn, Notary Public,  
Hamilton County, Ohio.  
Filed JAN 16 1946  
REG. FOR RECORD No. 9 AT 9:51 AM  
GEORGE E. KEARNS, RECORDER, HAMILTON COUNTY, OHIO

Gen. Ind. 8th Ser. Bk. 34 P212  
WARRANTY DEED  
With Dower—Copyrighted.

JAN 16 1946 401502 —C13—

## Know all men by these presents:

That Henry Maschmeier,

in consideration of One (\$1.00) Dollar and other good and valuable considerations,

to him paid by Ernst R. Schmer and Marie C. Schmer, husband and wife,

the receipt whereof is hereby acknowledged, does hereby Grant, Bargain, Sell and Convey to the said Ernst R. Schmer and Marie C. Schmer,

their heirs and assigns forever:  
the following described real estate:-

Situate in Section 27, Town 3, Fractional Range 3, Miami Purchase, City of Cincinnati, Hamilton County, Ohio, and being a part of Lot Eleven (11) of Edward Roll's Estate as the same is recorded in Deed Book 24, page 355 of the Hamilton County Recorder's Office, and described as follows:

Beginning at a point in the east line of Cass Avenue, where the same is intersected by the north line of said Lot Eleven (11); thence south 87°40' east in the north line of said Lot Eleven (11), a distance of three hundred sixty-eight and 80/100 (368.80) feet; thence south 2°52' west three hundred sixty-three (363) feet to a point in the north line of Steffregen and Schuetze's Subdivision as the same is recorded in Plat Book 8, Vol. 1, page 58, Hamilton County Recorder's Office; said last mentioned point is three hundred sixty-eight and 80/100 (368.80) feet east of the east line of Cass Avenue, as measured in the north line of said last mentioned subdivision; thence north 83°16' west in the north line of said last mentioned subdivision, two hundred sixty-eight and 83/100 (268.83) feet, more or less, to a point one hundred and 27/100 (100.27) feet east of the east line of Cass Avenue as measured in the north line of said last mentioned subdivision; thence northwesterly parallel with the east line of Cass Avenue, ninety-six and 24/100 (96.24) feet to the northeast corner of the tract conveyed to Louis and Teresa Branno by deed recorded in Deed Book 1474, page 172; thence westwardly parallel with the north line of said Lot Eleven (11), and in the north line of said last mentioned tract, a distance of one hundred (100) feet to a point in the east line of Cass Avenue; thence northwardly in the east line of Cass Avenue, two hundred and fifty (250) feet, more or less, to the point of beginning.

Being a part of the premises conveyed to Henry Maschmeier by deed recorded in Deed Book 926, page 428, Hamilton County Recorder's Office,

2139 11/27  
and subject to an easement in and upon above described property to the  
City of Cincinnati for all water sloping, cuts and fills required as  
shown on plan of accession #11877 on file in the office of the Engineer  
of Sewers of the City of Cincinnati, Ohio, as per deed from Henry  
Maschmeyer to the City of Cincinnati, recorded in Deed Book 1869, page  
805 of the Hamilton County, Ohio Records.

and all the Estate, Title and Interest of the said Henry Maschmeyer,

either in Law or Equity, of, in and to the said premises; Together with all the privi-  
leges and appurtenances to the same belonging, and all the rents, issues and profits  
thereof. To have and to hold the same to the only proper use of the said

Ernst R. Sohmer and Marie C. Sohmer,

their heirs and assigns forever.

And the said Henry Maschmeyer,

for himself and his heirs, executors and administrators,  
do es hereby Covenant with the said Ernst R. Sohmer and Marie C. Sohmer,

that he is the true and lawful owner of the said premises,  
and has full power to convey the same, and that the title so conveyed is Clear,  
Free and Unincumbered; And further, That he do es Warrant and Will Defend  
the same against all claim or claims of all persons whomsoever, except in case of  
any title in derogation of the same, which the said Henry Maschmeyer  
knows and agrees to pay.

In Witness Whereof, The said Henry Maschmeyer and Louise K. Maschmeyer  
have hereunto set their hands and seals, this

who hereby release all right and expectancy of Dower in the said prem-  
ises, have hereunto set their hands and seals, this  
12th day of January, in the year  
of our Lord one thousand nine hundred and forty-six (1946).

Signed and acknowledged in presence of:

*John W. B. Smith*  
*Charles K. Smith*

*Henry Maschmeyer*  
*Louise K. Maschmeyer*

State of OHIO, County of HAMILTON, ss.

Be it Remembered, That on this  
12th day of January, 1946, in the year of our Lord one thousand nine  
hundred and forty-six (1946), before me, the undersigned a  
Notary Public, in and for said county, personally came

Henry Maschmeyer and Louise K. Maschmeyer,

# Know all Men by these Presents

That

HENRY MASCHMEYER and LOUISE MASCHMEYER, his wife,

for consideration of One (\$1.00) Dollar and other good and valuable considerations

do hereby

ERNEST R. SOMMER and MARIE O. SOMMER, his wife,  
No. 3720 Harrison Avenue, Cincinnati, Ohio

the receipt whereof is hereby acknowledged, do hereby transfer, release and forever Quit Claim to the said

ERNEST R. SOMMER and MARIE O. SOMMER

their heirs and assigns forever

the following described real estate situate in Section 27, Town 2, East of Range 2, Miami Purchase, City of Cincinnati, Hamilton County, Ohio, and being a part of Lot Eleven (11) of Edward Ball's Estate, as the same is recorded in Deed Book 21, page 338, of the Hamilton County Recorder's Office, and described as follows:

Beginning at a point in the east line of Cass Avenue, where the same is intersected by the north line of said Lot Eleven (11); thence south 87° 40' east on the north line of said Lot Eleven (11), a distance of three hundred sixty-eight and 80/100 (368.80) feet, thence south 87° 40' west three hundred sixty-three (363) feet to a point in the north line of Stiefregen and Schuetz's Subdivision, as the same is recorded in Plat Book B, Volume 1, page 58 of the Hamilton County, Ohio, Recorder's Office; thence south 87° 40' east on the east line of Cass Avenue, as measured in the north line of said last mentioned subdivision, thence north 83° 13' west in the north line of said last mentioned subdivision, two hundred and 53/100 (200.53) feet, more or less, to a point and as measured in the north line of said last mentioned subdivision, thence northwardly parallel with the east line of Cass Avenue, ninety six and 10/100 (96.10) feet to the Northeast corner of the tract conveyed to Louis Frazee and Frazee's Heirs, his wife, by deed recorded in Deed Book 21, page 306 of the Hamilton County, Ohio, Recorder's Office, thence northwardly parallel with the north line of said Lot Eleven (11), and in the north line of said last mentioned tract, a distance of one hundred (100) feet to a point in the east line of Cass Avenue, thence northwardly in the east line of Cass Avenue, two hundred and fifty (250) feet, more or less, to the point of beginning.

And being the same premises conveyed to Ernest R. Sommer and Marie O. Sommer, his wife, by deed recorded in Deed Book 21, page 338, of the Hamilton County, Ohio, Recorder's Office, and subject to an easement in and over said premises for the use of the City of Cincinnati for all public utility, gas, and other purposes, as shown on plan of easement filed in the office of the Engineer or Surveyor of the City of Cincinnati, Ohio, as per deed from Henry Maschmeyer to the City of Cincinnati, recorded in Deed Book 1240, page 303, of the Hamilton County, Ohio, Recorder's Office.

HENRY MASCHMEIER and LOUISE MASCHMEIER

privileges and appurtenances to the same belonging and all the rents, issues, and profits thereof. To have and to hold the same to the only proper use of the said

ERNEST R. SCHMER and MARIE O. SCHMER

their heirs, and assigns forever.

The purpose of this deed is to correct an error in the description in a deed from Henry Maschmeier to Ernest R. Schmer and Marie O. Schmer recorded in Deed Book 2139, page 282 of the Hamilton County, Ohio, Records.

Witness my hand and seal, The said

HENRY MASCHMEIER and LOUISE MASCHMEIER, his wife,

who hereby releases all her right and expectancy of Dower in the said premises, have hereunto set their hands

16<sup>th</sup> day of May in the year of our Lord one thousand nine hundred and forty-eight.

Signed and acknowledged in presence of

John W. Bullock

Betty Loid

as to both

Henry Maschmeier

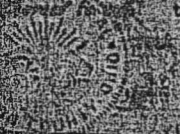
Louise Maschmeier

State of Ohio, County of Hamilton, ss.

We it Reminded, That on this 26<sup>th</sup> day of May in the year of our Lord one thousand nine hundred and forty-eight before me, the subscriber, a Notary Public in and for said county, personally came

HENRY MASCHMEIER and LOUISE MASCHMEIER, his wife,

who presented the foregoing Deed, and acknowledged the signing thereof to be their voluntary act and deed



In Testimony Whereof, I have hereunto subscribed my name and affixed my notarial seal

一、二、三、四、五、六、七、八、九、十、十一、十二、十三、十四、十五、十六、十七、十八、十九、二十、二十一、二十二、二十三、二十四、二十五、二十六、二十七、二十八、二十九、三十、三十一、三十二、三十三、三十四、三十五、三十六、三十七、三十八、三十九、四十、四十一、四十二、四十三、四十四、四十五、四十六、四十七、四十八、四十九、五十、五十一、五十二、五十三、五十四、五十五、五十六、五十七、五十八、五十九、六十、六十一、六十二、六十三、六十四、六十五、六十六、六十七、六十八、六十九、七十、七十一、七十二、七十三、七十四、七十五、七十六、七十七、七十八、七十九、八十、八十一、八十二、八十三、八十四、八十五、八十六、八十七、八十八、八十九、九十、九十一、九十二、九十三、九十四、九十五、九十六、九十七、九十八、九十九、一百。

10. consideration of One (\$1.00) Dollar and other good and valuable considerations

100

2444

WILLIAM BUCHANAN and GEGG BATHY  
No. 3749 Haroon Avenue, Cincinnati, Ohio

and such damage to the said

ARMED BATTLES and great RANSOM  
and the right of responsibility to  
the survivors of actions of them.

ON THE HORN AND UNDER THE

The following described real estate situate in Section 37, Town 5, National Range 2, Miami Purchase, City of Cincinnati, Hamilton County, Ohio, and being a part of Lot Eleven (11) of Edward Roll's Estate, as the same is recorded in Deed Book No. Page 385, of the Hamilton County Recorder's Office, and described as follows:

Beginning at a point in the east line of Cass Avenue, where the same is intersected by the north line of said lot Eleven (11), thence south three hundred sixty-eight and 50/100 [368.50] feet, thence south 20° 13' 28" east three hundred sixty-three (663) feet to a point in the north line of Block 9, Volume 1, page 58, of the Hamilton County, Ohio Records [1863 30] west east of the east line of Cass Avenue, as measured in the west in the north line of said last mentioned subdivision; thence north 87° 16' 11" west 587/100 [587.10] feet, thence north 87° 16' 11" west 27/100 [27.10] feet, more or less, to a point in the north line of said lot Eleven (11), and east line of Cass Avenue, as measured in the north line of said last mentioned subdivision; thence south 20° 13' 28" east to the north line of Cass Avenue, thence east 100 feet, thence east 100 feet to a point in the east line of said lot Eleven (11), and east line of Cass Avenue, as measured in the north line of said last mentioned subdivision; thence north 87° 16' 11" west 27/100 [27.10] feet, more or less, to a point in the north line of said lot Eleven (11), and in the east line of Cass Avenue, as measured in the north line of said last mentioned subdivision; thence north 87° 16' 11" west 27/100 [27.10] feet, more or less, to the point of beginning.

[illegible]

Know all men by these presents, that the said *William Hatcher and Olga Ralphy* and the survivor of them, for and in consideration of the sum of *one hundred and fifty dollars* to them in hand paid by the said *Ernest R. Sommer and Marie O. Sommer*, the receipt of which is hereby acknowledged, have granted, sold, conveyed and confirmed, and by these presents do grant, sell, convey and confirm unto the said *Ernest R. Sommer and Marie O. Sommer*, his or her heirs and assigns forever,

And the said *Ernest R. Sommer and Marie O. Sommer* for themselves and their heirs, executors and administrators, do hereby Covenant with the said *William Hatcher and Olga Ralphy* and the survivor of them,

that they are the true and lawful owner of the said premises and have full power to convey the same; and that the title so conveyed is Clear, Free and Unincumbered; And Further, That they do warrant and will defend the same against all claims or claims of all persons whomsoever, except taxes due and payable in June, 1948, and thereafter all of which the grantees herein assume and agree to pay.

In Witness Whereof, The said *Ernest R. Sommer and Marie O. Sommer*, his wife, who each convey in their own right, and who each release all their right, title and expectancy of power in the premises of each other,

have hereunto set their hands and seals the *25<sup>th</sup>* day of *May* in the year of our Lord one thousand nine hundred and forty-eight.

Witness my hand and seal in presence of *John H. Sommer* and *Marie O. Sommer*  
*Ernest R. Sommer*  
*Marie O. Sommer*

State of *Ohio* County of *Hamilton*

Be it Remembered, that on this *25<sup>th</sup>* day of *May* in the year of our Lord one thousand nine hundred and forty-eight, before me, the undersigned, a Notary Public in and for said State of Ohio, personally came *Ernest R. Sommer and Marie O. Sommer*, his wife,

known to me and known personally to me, and they acknowledged to me that they executed the foregoing instrument for the purposes and consideration therein expressed.

and that the title so conveyed is Clear, Free and Uncumbered, and further that he will Warrant and Defend the same against all claims of all persons whomsoever, - The Grantor herein assumes the payment of all Taxes and assessments hereafter becoming due and payable. -

In Witness Whereof. The said Morris Bauer and Henrietta Bauer his wife, who hereby releases all her right and expectancy of Dower in the said Premises, - hereunto set their hands, this Seventh day of March, in the year of our Lord, One Thousand Nine hundred and Five.

Signed and Acknowledged

in presence of -  
Anna Miller  
Joe Bauer

Morris Bauer  
Henrietta <sup>his</sup> Bauer

- State of Ohio. County of Hamilton S. S. -  
Be it Remembered, That on this Seventh day of March, in the year of our Lord, One Thousand Nine hundred and Five, before me, the undersigned, a Notary Public, in and for said County, personally came Morris Bauer and Henrietta Bauer, his wife, the grantors in the foregoing Deed, and acknowledged the signing thereof to be their voluntary act and deed.

In Testimony Whereof, I have hereunto subscribed my name and affixed my Notarial Seal, on the day and year last aforesaid.

Walter M. Blinhardt.  
Notary Public.

Hamilton County Ohio.

Filed for Record, June 14<sup>th</sup> 1905. © 11:02 A. M. J.D. 58 p. 11.

25 6 11 1905.

Deed.

Henry Barkham, et al. To. Henry Maschmeyer.  
per Atty. -

- Whereas, on the 6<sup>th</sup> day of October, A.D. 1904, Henry Barkham, Plaintiff filed his Certain Petition in the Court of Common Pleas, of Hamilton County Ohio, against Frederick Barkham, Charles Barkham, William Barkham, Catharine Dinker, Sophia Kline, Edith Barkham, - a minor aged 14 years, Catharine Dinker, Guardian of said Edith L. Barkham, Harry C. Kline, husband of said Sophia Kline, Benjamin Dinker, husband of Catharine Dinker, Defendants, and numbered on the docket of said Court, as case No. 199984, praying therein for "Partition of Real Estate"; (Afterwards, Anthony B. Dunlap was duly appointed Guardian ad litem, for said minor defendant and appearing in open Court accepted said appointment. -) And Whereas,

DEED BOOK -

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afterwards, to wit. on the 13<sup>th</sup> day of December, in the Term of October, A. D. an order was made by said Court, in said cause finding among other things that each of said defendants, had been duly notified of the pendency <sup>and</sup> the prayer of the petition <sup>and</sup> had failed to answer a demand to the same, save said Edith Barkhan, who by her Guardian ad litem appointed therein had duly answered the same, that the Plaintiff Henry Barkhan, had a legal right to <sup>and</sup> was seized with <sup>in</sup> title of one seventh part of the premises described in the petition, that said Frederick Barkhan, Charles Barkhan, William Barkhan, Catherine Dierke, Sophia Kline, and Edith Barkhan, were tenants in common in said Premises, with said Plaintiff, <sup>and</sup> were each seized of one seventh part thereof, that the Plaintiff was entitled to partition as prayed for - - It was therefore ordered adjudged <sup>and</sup> decreed that an order issue to the Sheriff of said County, Commanding him that by the aid of Frederick Stallman Jr. William Rockling, and John Hackmeier, three disinterested freeholders of said County, he cause partition to be made of said premises among the several parties entitled thereto, <sup>and</sup> in the proportions theretofore found, and that if the same could not be done without manifest injury to the premises, he cause said premises to be appraised by said Commissioners at their true value in money. And that he make return of his proceedings to said Court. -

- And Whereas, afterwards to wit, on the 17<sup>th</sup> day of December, A. D. 1904. an Order of Partition was issued out of the Clerk's office of said Court, to the Sheriff of said County, Commanding him to cause partition to be made of said premises, in accordance with the order of said Court. - And Whereas, afterwards to wit - on the 17<sup>th</sup> day of December, A. D. 1904. said Sheriff returned said order, together with the report of the Commissioners, that said premises could not be divided without manifest injury, and that they had appraised the premises hereinafter described, at its actual value in money, to wit. the sum of \$ 3000.00 - And Whereas, afterwards to wit. - on the 16<sup>th</sup> day of March A. D. 1905. said Court having examined the proceedings of said Sheriff, the report of said Commissioners, <sup>and</sup> the return by said Sheriff, made, and finding the same in all respects correct <sup>and</sup> in conformity to law did approve <sup>and</sup> confirm said report, and thereupon neither of the parties electing to take said premises at the appraised value thereof, it was ordered by said Court that said Sheriff, proceed to advertise and sell said premises according to law on the premises, and that he make return of his proceedings to said Court. - And Whereas -

aforesaid to wit, on the 22<sup>d</sup> day of March A. D. 1905. - in  
 pursuance of said order <sup>and</sup> judgment of said Court, <sup>and</sup> found-  
 ed thereon, an order of sale issued from said Court, in  
 said case, directed to Salmon Jones, Sheriff of Hamilton  
 County, Ohio, Commanding him to execute the said order, <sup>and</sup>  
 in all things to be governed by the provisions of the statute  
 in such case made <sup>and</sup> provided, <sup>and</sup> of said order, with his  
 proceedings thereon, he should make due return. - And  
 Whereas, the said Salmon Jones, Sheriff aforesaid, hav-  
 ing advertised the time <sup>and</sup> place of selling said premises in  
 The Cincinnati Commercial Tribune, <sup>and</sup> Cincinnati Free  
 Press, newspapers printed and of general circulation in  
 said County, for the period of Thirty days prior to the day  
 of sale, <sup>and</sup> otherwise complied with the said order, <sup>and</sup>  
 the provisions of the statute in relation to such cases did  
 on the 27<sup>th</sup> day of April, A. D. 1905, on the premises, in  
 Cincinnati, at 10 o'clock A. M. of said day, expose to sale  
 at public auction, the premises hereinafter mentioned, and  
 thereupon Henry Maschmeier, did bid for the premises, the  
 sum of Twenty Two Hundred (\$2200.00) Dollars, which  
 said sum being the highest <sup>and</sup> best bid offered for the same  
<sup>and</sup> not less than two thirds the appraised value thereof.  
 the said premises were then <sup>and</sup> there struck off to him the  
 said Henry Maschmeier, the purchaser for the sum above  
 mentioned. - And Whereas, the said Court at its April Term,  
 1905, having examined the proceedings of the said Salmon  
 Jones, Sheriff aforesaid, in the premises under said order  
 of sale, <sup>and</sup> being satisfied that the sale aforesaid, had  
 been made in all respects in pursuance of said judgment  
<sup>and</sup> order of sale, <sup>and</sup> according to the requisitions of the  
 statute regulating such sales, did order that such sale  
 should be confirmed, <sup>and</sup> that the said Sheriff of Hamilton  
 County should convey the said premises by deed in fee-  
 simple to the purchaser aforesaid, And it appearing to the  
 Court that said purchaser desired to pay all Cash, it  
 was ordered that said Sheriff receive the same. - Now -  
 Know Ye - That the said Salmon Jones, Sheriff aforesaid,  
 by virtue of said order for partition, order for sale, sale  
<sup>and</sup> confirmation, <sup>and</sup> of the statute in such cases made  
<sup>and</sup> provided, <sup>and</sup> for <sup>and</sup> in consideration of the Premises here-  
 in, <sup>and</sup> the sum of Twenty Two Hundred (\$2200.00) Dollars,  
 which I acknowledge to have received from Henry Maschmeier  
 (to here by sell <sup>and</sup> convey unto him the said Henry Masch-  
 meier, his heirs <sup>and</sup> assigns forever) :-

- The following described  
 Real Estate, to wit- All that tract of Land, in Section 27.

Deed Book-

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Township 3. T. R. v. of the Miami Purchase, Hamilton County, Ohio, and beginning in the North line of lot No. Ten (10) - of E. C. Roll's Subdivision, in said Section at the Center of West Fork Creek, thence west along the North line of lot 10. and of lot 11, of said Subdivision to the East line of Collins Avenue, thence South along the East line of Collins Avenue - 336.68 feet more or less to the South line of G. W. Barkham's - and, thence South 83. degrees, 05. Minutes East about 417. feet to the East line of lot No. 11. aforesaid, thence North, along the East line of said lot No. 11. to the Center of the West Fork Creek, thence in a Northeasterly direction along the center of said Creek to the North line of said lot 10. at the place of beginning, containing 3.68. Acres, more or less, and being the two tracts of land marked 3.27, and 41 Acres, as shown upon G. W. Barkham's Subdivision, as recorded in Plat-Book 7. page 82. Records of said County, saving and excepting therefrom a lot of 31.44. feet on Collins Avenue, by 100. feet deep, as decided by G. W. Barkham to H. C. Kline, as per Deed recorded in Book 743. page 581. with an agreement to dedicate a 12 foot wide Alley through said premises, and saving and excepting therefrom a lot 30.44. feet front on Collins Avenue by 100. feet deep, as herein set off by the Commissioners in partition to Sophia Kline.

- Together with all the privileges, and appurtenances thereto belonging, and all the right, title and interest of the said Henry Barkham, Frederick Barkham, William Barkham, Catherine Diwke, Sophia Kline, Edith Barkham, Catherine Diwke, Gmandian, Henry C. Kline, Benjamin Diwke, Charles Barkham, and of all the other parties to said suit of in and to the same. To have and to hold the premises aforesaid, unto the said Henry Marchmeier, his heirs and assigns forever, as fully and completely as if the said Salmon Jones Sheriff of Hamilton County Ohio, by virtue of said order for partition, order of Sale, Sale and Confirmation, and of the Statute made and provided for such cases might or should sell and convey the same. In Witness Whereof, I have hereunto set my hand and Seal, this 23<sup>d</sup> day of May. A. D. 1905.-

Signed, Sealed and Acknowledged

in presence of -  
Louis L. Robinson  
Geo. W. Finn

Salmon Jones, (seal)  
Sheriff -  
of Hamilton County Ohio.

State of Ohio.

Hamilton County, I S. L. - Personally appeared before me, the undersigned, a Notary Public within and for said County the above named Salmon Jones, Sheriff of Hamilton County

Ohio, the grantor in the above deed of Conveyance, who acknowledged the signing and sealing of the same to be his voluntary act and deed, for the uses and purposes therein mentioned. - In Witness Whereof I have hereunto set my hand and affixed my Notarial Seal, this 23<sup>d</sup> day of May A.D. 1905.

(N. P.  
Seal.)

Louie L. Robinson -  
Notary Public.  
Hamilton County Ohio.

Rec<sup>d</sup> for Record - June 17<sup>th</sup> 1905. @ 11.<sup>00</sup> A. M. J.B. 11.74.

Geo. 1/10

## Deed.

Fred. W. Klam, Assignee. - To. J. T. Thompson  
- Know all Men by these Presents:  
That Whereas, on the 8<sup>th</sup> day of June, 1904, John T. Whighell, made an assignment of all his property including the Real-Estate hereinafter described, in trust for the benefit of his Creditors to Fred. W. Klam, the Deed of Assignment, - was filed in the Insolvency Court of Hamilton County Ohio, on the 9<sup>th</sup> day of June, 1904, at 9.<sup>12</sup> o'clock, A. M. and on the 10<sup>th</sup> day of June, 1904, said Fred W. Klam was duly appointed and qualified as Assignee of said John T. Whighell by the Insolvency Court of said County, and afterward to wit, on the 19<sup>th</sup> day of July, 1904, said Assignee filed his Certain petition, and then and thereby commenced an action in the Insolvency Court of Hamilton County Ohio, against John T. Whighell, Mary E. Whighell, F. R. French, the State of Ohio, John H. Gibson, Treasurer of Hamilton County Ohio, Eugene L. Lewis, Auditor of Hamilton County Ohio, H. L. Van Treese, et. al. and numbered on the Docket of said Court as case No. 422, praying among other things for an order of Sale of Certain Real-estate therein mentioned, and hereinafter described. - And Whereas such proceedings were had in said action that on the 31.<sup>st</sup> day of January, - 1905, said Court, finding the allegations of the petition true, and that said Real Estate, ought to be sold as prayed for in said petition, and on same day an order for Sale, - was issued, which was afterwards set aside and on May 23<sup>d</sup> 1905, a decree was entered which ordered that said Assignee proceed according to law to sell the said Real Estate at private Sale, for not less than two thirds of the appraised value thereof. And on the same day, in pursuance of said order and judgment, an order of Sale, with said Real-Estate therein described, was issued out of said Court, under the Seal thereof, to the said Fred.

Deed Book -

926

APPENDIX F

# MUNDELL & ASSOCIATES, INC.

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429 East Vermont Street, Suite 200, Indianapolis, Indiana 46202-3688  
Phone: 317-630-9060, Fax: 317-630-9065, email: [info@MundellAssociates.com](mailto:info@MundellAssociates.com)

April 30, 2003

Mr. Michael J. Luessen  
Environmental Division Manager  
ATC Associates, Inc.  
11121 Canal Road  
Cincinnati, Ohio 45241

Re: Report of Geophysical Survey  
**Buried Metal Detection Survey**  
**Herron Avenue Site, Community of South Cumminsville Parcel**  
**Cincinnati, Ohio**  
Mundell Project Number M03020

Dear Mr. Luessen:

In accordance with our proposal dated March 25, 2003, MUNDELL & ASSOCIATES, INC. (MUNDELL) is providing ATC Associates, Inc. (ATC) final written documentation of the geophysical survey conducted at the Herron Avenue Site located along Herron Avenue between Dreman and Powers Avenues, Cincinnati, Ohio (Site). The geophysical survey was conducted on April 15, 2003. The intent of this geophysical project is to determine the approximate horizontal limits of accumulations of buried metal, potentially including steel drums.

## **Introduction**

The Site is located along a previously undeveloped length of Herron Avenue. Recent construction work as part of a proposed residential development effort has revealed the presence of buried steel drums within a portion of the Site. The proposed area of development is owned by the community of South Cumminsville with the exception of a right-of-way corridor, which is owned by the City of Cincinnati. The right-of-way is approximately 650 feet long and 50 feet wide, comprising an area of approximately 0.75 acres. The remaining portion owned by South Cumminsville is an irregularly-shaped parcel approximately 3.34 acres in size. The information presented in this report concerns only the portion of the proposed development that is owned by the Community of South Cumminsville.

At the time of the geophysical survey, the Site primarily consisted of exposed graded soil and tree cover with some piles of debris and new construction materials. Given the size of the Site, it was determined that geophysical mapping would be an appropriate means to provide a preliminary, non-intrusive assessment of buried metal accumulations.

Based on the site conditions and project objectives, MUNDELL performed an EM-61 MKII metal detection survey using a Global Positioning System (GPS) receiver to calculate the instrument location. It was determined that data would be collected along lines spaced approximately 2 meters apart.

### **Scope and Results of Geophysical Survey Performed**

#### **Survey Control**

To control data collection, a rough grid system was setup at the site. Temporary flags were placed approximately 2 meters apart along east-west lines spaced approximately 50 feet apart. The rough grid system was used as a guide to ensure proper data density during the data collection process. Actual data locations were tracked with a Trimble Ag114 GPS system, which obtained real-time differentially-corrected positions at one second intervals. The GPS positioning data were recorded by the EM-61 MKII data logger.

#### **EM-61 Metal Detection**

MUNDELL collected metal detection data using a Geonics EM-61 MKII. The EM-61 is a high-sensitivity, high-resolution, time-domain metal detector. It consists of two vertically-separated, coaxial, square coils, each with a dimension of one meter by one meter, mounted to a wheel assembly. The instrument operator pulls the coil assembly along the line of profile while data is collected nearly continuously (one reading every 0.63 feet). Data were collected along north-south lines spaced approximately 2 meters apart, according to the rough grid placed on the ground. As the operator traversed the study area, the coil response in millivolts (mV), and GPS positions were recorded by a digital data logger. The EM-61 MKII is designed to take readings from the bottom coil at three successive time gates (channels 1-3) after shut-off of the transmitter coil has occurred. When energized, the transmitter coil creates an electromagnetic field (EMF), which induces a secondary EMF in subsurface materials that decays over time. The EMF associated with poor conductors decays relatively quickly, while the EMF associated with conductive metallic objects decays relatively slowly. Objects that are more conductive therefore have a proportionately larger signal in the later time gates than objects that are less conductive. The earliest time gate reveals the presence of a wide range of conductive objects and is most useful for determining where all metallic objects are located. The latest time gate is a more selective view of conductive objects because it tends to reflect the locations of the most extensive

and most conductive objects. At the third time gate the data logger also records the signal strength from the upper coil (channel 4). This additional measurement is used to filter out the effect of near-surface metallic materials, allowing for a distinction between deeper and shallower metallic objects. This is done by subtracting bottom coil response from the top coil response to yield the channel difference.

Once the data were gathered, they were transferred to a laptop computer. Positional data from the GPS receiver were merged with the EM-61 signal response data using *DAT61MKII*. Data were then imported into *Surfer v8.0* for gridding, contouring, and plotting as color-filled contour maps of signal strength at the latest time gate (Channel 3, presented on Figure 1), and the Channel Difference (Figure 2).

### **Data Interpretation**

Figure 1 illustrates the EM-61 Channel Three (late time gate) metal detection results as a color contour map of the bottom coil response (in milliVolts). Both surficial and buried metal objects, such as steel posts, drums, drum lids, wheel rims, cast iron, and reinforced concrete, typically register the greatest signal strengths (hundreds of millivolts). Using a standard MUNDELL color scale for depicting significant collections of metallic objects, Figure 1 shows both above ground and buried metallic objects as red to violet. Areas with lesser concentrations of metallic objects are depicted as yellow to orange, while areas with few or no metallic objects are presented as cross-hatched. The Channel Difference map (Figure 2) uses the same color scale to portray buried metallic objects.

The Channel Three map (Figure 1), which is a gross indicator of metallic objects both above the surface and beneath the surface, shows an area of strong coil response (red to violet in color) across the central portion of the Site. This map clearly indicates a nearly pervasive presence of metallic objects, and the pattern of these anomalies suggest a poorly organized, randomly placed response typical of landfills. This area of strong Channel Three coil response is greatly subdued on the Channel Difference map (Figure 2), indicating that the bulk of metallic objects in this area are either at or near the surface. The Channel Difference calculation helps focus the interpretation on the more deeply buried objects of potential interest.

A large number of relatively strong anomalies caused by buried metallic objects are found on the Channel Difference map (Figure 2), mostly in the northern two-thirds of the Site<sup>1</sup>. Based upon MUNDELL'S prior experience with metal detection surveys where drum burial was documented, significant accumulations of buried metal generally have a channel

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<sup>1</sup> The red to violet areas observed on the Channel Three map (Figure 1) are primarily interpreted as being caused by debris, scrap metal, old castings, etc., that were observed at the surface during the data collection process.

difference response of approximately 250 mV or greater. Anomalies of this magnitude seen on the Channel Difference map are delineated on Figure 2 with a hachured blue line. With the exception of the two largest anomalies in the study area, the magnitude, size, shape, and sporadic distribution of the delineated anomalies is generally not consistent with typical anomalies seen at systematic drum burial sites; thus, if drums are present, they appear to have been buried in a somewhat random pattern within the larger fill accumulation. The exception to this generalization is the anomaly centered at UTM 711402E, 4336935N, which is the most laterally extensive, regularly-shaped, and highest magnitude anomaly found across the study area.

### **Conclusions and Recommendations**

EM-61 metal detection mapping has revealed occurrences of numerous sporadically placed metallic objects with corresponding anomalies that vary widely in size and shape. These metallic objects were placed in accumulations of domestic and industrial wastes in a somewhat haphazard pattern. The central portion of the Site contains a laterally extensive collection of surficial metallic objects which strongly influenced the EM-61 survey. The deeper-focused Channel Difference data indicates a number of locations of buried metallic objects found within the Site. The nature of the metallic objects at these locations is not known at this time; however, most of the anomalies are not consistent with examples of systematic drum burial (i.e., organized burial in regularly shaped excavations) with which MUNDELL has had prior experience. However, the largest anomaly, centered at UTM 711402E, 4336935N, likely represents a significant accumulation of buried metal, and has a somewhat organized appearance possibly consistent with systematic drum burial.

If greater certainty regarding the origin of the geophysical anomalies is desired, it is recommended that direct observation (excavation) be conducted, particularly at the exceptional anomaly noted above. Each area of potential interest can be located by the UTM coordinates given on Figures 1 and 2, or by direct measurement from Site features portrayed on the aerial photo base map.

### **Limitations**

This study included a limited set of geophysical readings across limited portions of the Site. The results and interpretations of the geophysical survey performed are considered generally reliable and were conducted in a manner generally consistent with practitioners in the field of geophysical engineering. The methods used in this investigation are considered reliable; however, there may exist localized variations in the subsurface conditions that have not been completely defined at this time. Properly conducted test borings and other exploratory techniques are necessary to more completely determine the subsurface conditions at the site.

MUNDELL & ASSOCIATES, INC.

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The scope of our services does not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, ground water or surface water with in or beyond the site studied.

The site features presented on the site base map are for informational purposes only and no representation is made as to the accuracy or completeness of this information. It is recommended that a practicing professional with expertise in utility location be contacted prior to conducting drilling or excavating activities.

**Closing**

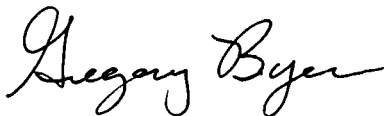
MUNDELL appreciates the opportunity to provide ATC with this geophysical survey, and we look forward to working with you on future projects. If you should have any questions regarding this project, please do not hesitate to contact us at 317-630-9060.

Sincerely,

**MUNDELL & ASSOCIATES, INC.**

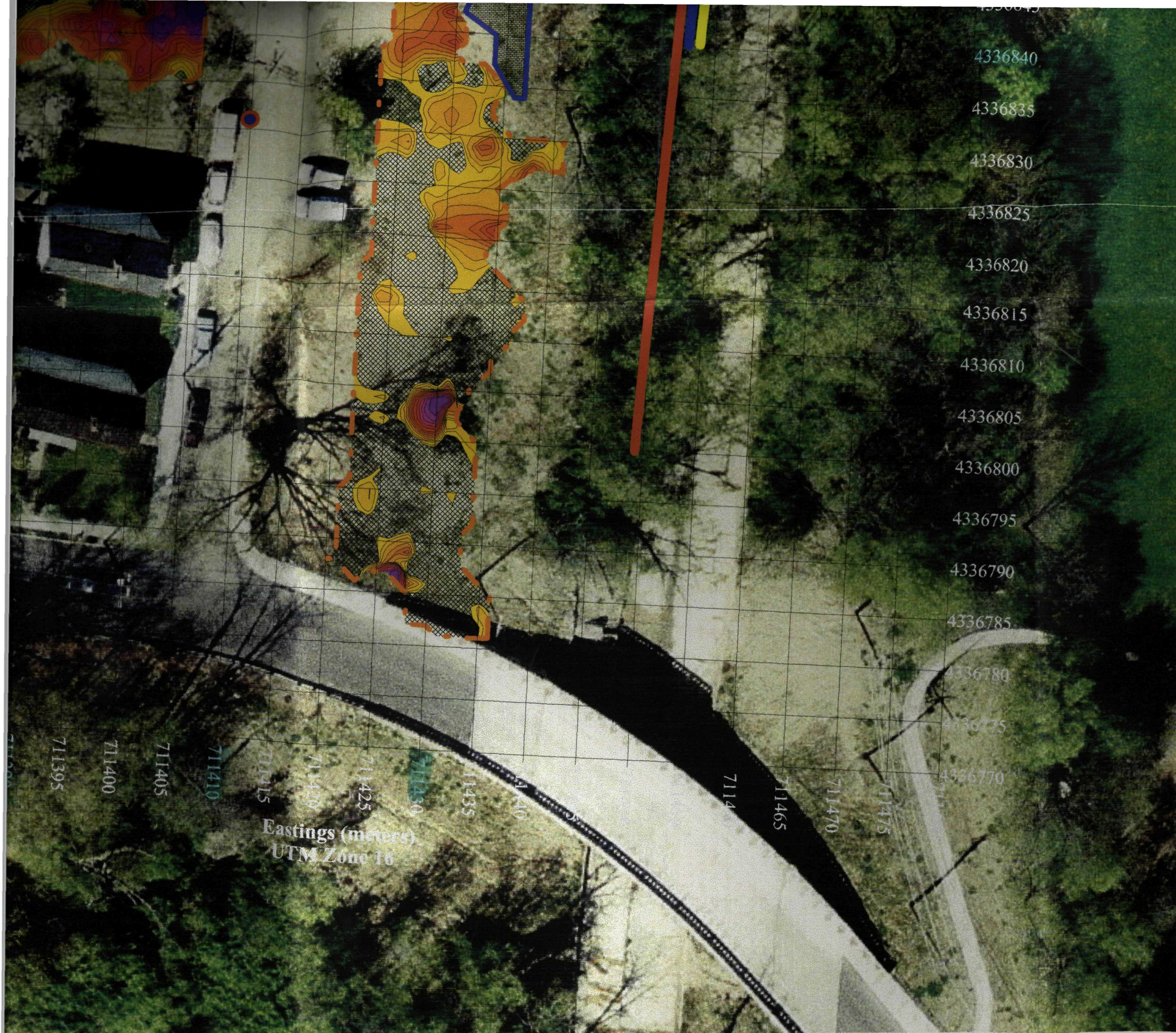


John Vanderlaan  
Staff Geologist / Geophysicist



Gregory B. Byer, P.E., L.P.G.  
Director of Geophysical Services

Attachments: Figure 1. EM-61 Channel Three Map  
Figure 2. EM-61 Channel Difference Map



60  
0  
-20000

Scale in Feet

0 10 20 30 40 50 60 70 80 90 100  
1" = 30'

**MUNDELL Project Number:** M03020  
**Client:** ATC Associates, Inc.  
**Project Name:** ATC Cincinnati Herron Ave Site  
**Project Location:** Cincinnati, Ohio  
**Date of Survey:** April 15, 2003  
**Type of Survey:** EM61 Metal Detection  
**Additional Services:** none  
**Geophysicists:** G. Byer, J. Vanderlaan  
**Line Spacing:** ~2 meters  
**In-line Data Point Spacing:** ~0.2 meters  
**Collection Mode:** wheel odometer

**Data Processing Program:** Surfer Version 8  
**Gridding Method:** Minimum Curvature  
Anisotropy = 1  
Cell Size: 1.0(X), 1.0(Y)

Main Surfer Map Path = R:\M03020...\Maps  
Surfer File = M03020.srf  
Processed Data Path = R:\M03020...\Processed Data  
Raw Data = R:\M03020...\Raw Data  
Data File (surfer-ready) = C25M03020UTM.tg3.xls  
Grid Files= M03020chdiff.grd, M03020ch2.grd  
Level File = M03020.lvl, M03020 diff.lvl  
Drafted By: JV

13:35:54 05/05/03

### Figure 1. EM-61 Channel Three Map

ATC Associates, Inc.  
South Cummins ville  
Herron Avenue Site  
Cincinnati, Ohio

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